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THE BOTANY

OF

THE ANTARCTIC VOYAGE

OF

H.M. DISCOVERY SHIPS *EREBUS* AND *TERROR*

IN THE YEARS 1839—1843,

55207

UNDER THE COMMAND OF

CAPTAIN SIR JAMES CLARK ROSS, Kt., R.N., F.R.S. &c.

BY

JOSEPH DALTON HOOKER, M.D., R.N., F.L.S.,

ASSISTANT SURGEON OF THE "EREBUS" AND BOTANIST TO THE EXPEDITION.

Victoria Barrier and Land. Lat. 78° S. Mount Erebus (active Volcano), and Mount Terror.

Published under the Authority of the Lords Commissioners of the Admiralty.

LONDON:

REEVE, BROTHERS, KING WILLIAM STREET, STRAND.

1844.

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TO

The Right Honourable

THE EARL OF MINTO, G.C.B.,

ETC., ETC.

My Lord,

As First Lord of that Board of Admiralty by which the Antarctic Expedition was so admirably equipped;—as the steady patron of its interests, not only during but subsequent to your administration of this high office;—and as the kind friend to whose encouragement and advice I am indebted for most of the facilities which have been granted me towards the publication of the Botany of the Antarctic Voyage;—I feel the exercise of the privilege you have accorded me, of dedicating the present Volume to your Lordship, to be equally an honour and a pleasure.

Believe me to remain,

With sentiments of the highest respect and esteem,

Your Lordship's truly obliged and grateful servant,

JOSEPH DALTON HOOKER.

Royal Gardens, Kew,
Sept. 6th, 1847.

I.

FLORA ANTARCTICA.

PART II.,

BOTANY OF FUEGIA, THE FALKLANDS, KERGUELEN'S LAND, ETC.

BOTANY

OF

THE ANTARCTIC VOYAGE.

FLORA ANTARCTICA.

II. ANTARCTIC REGIONS, (exclusive of Lord Auckland's Group and Campbell's Island).

The First Part of the Botany of the Antarctic Voyage is devoted to the vegetation of a few islands, containing plants so peculiar, and differing so remarkably from those of the other South Polar Islands as to render it advisable that they should be described by themselves, and should form a distinct and separate Flora. A review of this Flora, now completed, shows the vegetation of Lord Auckland's group and Campbell's Island to be, in some measure, a continuation of that of New Zealand. This fact might have been inferred from the geographical position of those islands, which are moreover the only countries known where the peculiar features of the Polynesian Flora are represented by species characteristic of an Antarctic climate; such features being indicated chiefly by the paucity of *Compositæ* and predominance of some shrubby *Rubiaceæ*.

The pages of the present portion of the work are destined to contain descriptions of all the plants ascertained to exist in what we may term the Antarctic regions, (Lord Auckland's and Campbell's Islands excepted), viz. Fuegia and some part of the south-west coast of Patagonia, the Falkland Islands, Palmer's Land, and the adjoining groups, as the South Shetlands, South Georgia, &c., and (proceeding eastward) Tristan d'Acunha and Kerguelen's Land. I shall preface the Flora of these widely severed, and in some cases very isolated spots, with a few remarks upon each, and on the general character of the whole as forming one great botanical region.

It may appear paradoxical, at first sight, to associate the plants of Kerguelen's Land with

those of Fuegia, separated by 140 degrees of longitude, rather than with those of Lord Auckland's group, which is nearer by about 50 degrees. But the features of the Flora of Kerguelen's Land are similar to, and many of the species identical with, those of the American continent, constraining me to follow the law of botanical affinity in preference to that of geographical position. Two alternatives presented themselves, each possessing some advantages over the course which is now adopted, of dividing the Antarctic Botany into two large sections: one, to consider each little island or group as a separate flora; but this would lead to much repetition, and is not warranted by the amount of novelty exhibited in any of the groups: the other, to unite all under one head; a plan certainly accompanied with many advantages, but counterbalanced by the consequent delay of the work, for it would have obliged the author to study the plants of two very different botanical regions at the same time. The remarkable beauty and novelty of the vegetation in Lord Auckland's and the neighbouring Islands also merited particular consideration. As it is, some plants described in Part I. will re-appear in the present; very few, however; so few as to excite surprise, when it is remembered that lands, far more remote from Tierra del Fuego than those to the south of New Zealand, possess the characteristics of the Fuegian Flora.

A certain affinity in botanical productions has often been traced in widely severed countries, and Professor E. Forbes* has lately brought geological causes to bear immediately upon

* Professor E. Forbes has connected the similarity, long known to exist between the Floras of the west of Ireland and Portugal, with certain geological characteristics belonging to both these now remote, but perhaps once united countries. Thus he also connects the Alpine Flora of Scotland with that of the Scandinavian Alps, and the botany of the Channel coasts and islands with that of France (vid. 'Report of the Meetings of the British Association in Cambridge, July 1845'). Uniformity of surface is generally accompanied by a similarity of vegetation throughout an extended region. When such a surface becomes divided we are apt to conclude that the isolation of the lesser portion preceded the migration of plants from the larger; in short, that the identity of the Norfolk and Suffolk Flora with that of Holland must be due to the former having been peopled with plants by the latter, subsequently to the German Ocean having assumed its present position; and not that the two together formed an equally well clothed and extended plain, reaching, as Humboldt believes, from North Brabant to the Steppes of Asia; its western portion having been afterwards insulated by the influx of the North Sea. The uniformity of surface in the vast continent of Africa is becoming daily more evident, as the mountains of the moon recede before the intrepid explorers of the sources of the true Nile. It were natural to suppose that a barrier, such as they were conjectured to be, would exhibit changes in the vegetation, equally marked with those produced by the Cordillera, Himalayah, and other mountain chains wherever they may occur. A further proof of the suspicious nature of the reports that any very extensive and elevated land exists in Africa appears to me evident in the character of Abyssinian vegetation. Mr. Brown first showed that it possessed types of the Cape Flora, and lately I received the most ample confirmation of these views from M. Richard, who exhibited to me a beautiful series of drawings of Abyssinian plants, made by the late unfortunate French travellers, amongst which were numerous *Proteaceæ*, *Asclepiadeæ*, *Orchideæ*, *Irideæ*, and *Amaryllideæ*, of forms which the Cape alone was supposed to possess. Central Eastern Africa is perhaps the most interesting spot in the world for a botanist; it contains not merely Cape orders, but others typical of Madagascar, the East Indies, Arabia, both the northern and western coasts of Africa itself, and on its high mountains those even of Europe. The uniformity of the surface and Flora of Australia is equally evident.

There are, however, instances of a sudden change in the vegetation occurring, unaccompanied with any diversity

this subject. In reference to this curious topic I would adduce, as corroborative perhaps of his speculations, the general geographical arrangement of those islands, whose botany I am about to describe as that of one country. They stretch from Fuegia on the west, to Kerguelen's Land on the east, between the parallels 45° and 64° of south latitude. Throughout this portion of the world the land exhibits a manifest tendency eastward, from the extreme south of the American continent; for there are no fewer than five detached groups of islands between Fuegia and Kerguelen's Land, but none between the latter island and the longitude of Lord Auckland's group, nor between this last again and the western shores of Fuegia and Patagonia.

Tierra del Fuego and the neighbouring southern extremity of the American continent appear to be the region of whose botanical peculiarities all the other Antarctic Islands, except those in the vicinity of New Zealand, more or less evidently partake. It presents a Flora, characterizing isolated groups of islands extending for 5000 miles to the eastward of its own position; some of these detached spots are much closer to the African and Australian continents, whose vegetation they do not assume, than to the American; and they are all situated in latitudes and under circumstances eminently unfavourable to the migration of species, save that their position relatively to Fuegia is in the same direction as that of the violent and prevailing westerly winds*.

Tierra del Fuego itself is a crowded archipelago, forming the southern extremity of

of geological or other feature. The river Obi, in Siberia, whose direction is towards the north-west, from the latitude of 50° to 67°, affords a most remarkable instance of this phenomenon, first mentioned by Gmelin and afterwards by Humboldt. Some of the most conspicuous trees attain either of its banks, but do not cross them, those of the regions to the west of this stream re-appearing only on the confines of China. I have received from Baron Humboldt much highly interesting verbal information upon the distribution of organized beings in Siberia; the disappearance of some animals and plants over a vast area, and their re-appearance in another, in obedience to no known law, are very striking facts. I must content myself with referring to the preface to Gmelin's '*Flora Sibirica*,' for copious examples of these seeming anomalies in the distribution of vegetables.

Many striking examples on the other hand may be instanced, of countries closely approximated in geographical position, but unlike in geological and other features, presenting widely different botanical aspects; such sudden changes in the vegetation we may observe on the east and west flanks of the Andes and on the Himalayah; in the Floras of St. Helena and Ascension, and the coast of Africa; or of Tristan d'Acunha and the Cape; of New Zealand and Australia; of Juan Fernandez and the Galapagos and the coast of America; of Madagascar and South Africa; but more especially in the disparity that prevails between the Floras of the separate islands of the Galapagos and of the Sandwich group.

* The prevalence of certain winds in favouring the migration of plants must not be overlooked, though too much stress has been laid by some writers upon their influence. An element that will carry particles of dust for hundreds of miles through the upper regions of the air, must be a powerful agent in disseminating the sporules of the lower orders of plants; so much so indeed that I should unhesitatingly deny the necessity of a double creation, to account for the same species of *Moss* or *Lichen* inhabiting any two spots on the globe, however widely apart. That currents of air are not equally efficacious in wafting the seeds of the higher orders is proved by the absence in the British Isles of many common European plants; though when once introduced by other means they increase rapidly. We further see that the tide of vegetation (like the population) has, in the intertropical Pacific Islands, set in a direction contrary to the prevailing winds, namely, from the Asiatic and not from the American

America; it is of an irregularly four-sided figure, bounded on the north by the strait of Magalhaens, and on the east and west respectively by the South Atlantic and South Pacific Oceans, whilst its southern shores are washed by the Antarctic Sea; the main body of land lies between the 53rd and 56th parallels of latitude and the 64th and 70th degrees of west longitude, and its greatest extension is from east to west, indicated by a diagonal of 500 miles. The general appearance of the whole has been aptly compared, by Mr. Darwin, to what would be presented by a partially submerged chain of mountains. These islands are, in fact, formed by the southern termination of the great Cordillera that traverses both Americas, which here trends to the eastward, and whose further extension is probably indicated by South Georgia in the same latitude; and possibly also by Prince Edward's Island, the Crozets, and Kerguelen's Land still more to the east, situated though these be in another ocean. The natural features of Fuegia have been admirably described by various voyagers, and more particularly by Cook, King, Fitzroy, and Darwin, to whose writings I would refer for more particular information. The exposed mountain-tops rise to a height of 7000 feet above the level of the sea, and the lower limit of perpetual snow is reckoned at 3500–4000 feet.

The botanical features exhibited by this country are not circumscribed by its geographical limits; along the north-east shores the very distinct Flora of East Patagonia accompanies the geological formation prolonged there from the Patagonian plains. On the south-west and south sides again, the vegetation is a continuation of that of West Patagonia, and is characteristic of the western flank of the Cordillera, from South Chili to Cape Horn. Thus it is that we find the Andes dividing two botanical regions from the North Polar almost to the Antarctic circle. The greater part of Fuegia is formed by the Andes alone; but the plants of the north-east portion, where the granitic formation of Patagonia introduces a change in the vegetation foreign to that of Tierra del Fuego, will be necessarily included in the present Flora.

The Deciduous Beech (*Fagus antarctica*), is the most distinguishing botanical production of this country. In company with the Evergreen Beech (*F. Forsteri*), it covers the land, especially on the west coasts, as far north as the Chonos Archipelago, in latitude 45° south. It is hardly seen in the north-east portions of Fuegia proper, northward of Staten Land, and though abundant on the west flanks of the Andes, through fourteen degrees of latitude, is unknown on the Atlantic side of Patagonia†. I have assumed therefore the shores of the

shores: and again, that the botany of the North Atlantic Islands, the Azores, Madeira, and the Canaries, though these groups are situated in the westerly winds, contain a large proportion of European species. The violence of the perennial westerly gales to the southward of 45° is proverbial amongst sea-faring men; such winds carried H.M.S. 'Chanticleer' from Cape Horn to the Cape of Good Hope, a distance of four thousand miles, in twenty-seven days, and have enabled an oceanic fowl, the Cape pigeon, to maintain its position close to a ship during the whole of that distance; but still I am not inclined to attribute the prevalence of the Fuegian Flora over so vast an area to their influence, when exerted against many other opposing agents.

† Trees allied to these seem to have characterized the ancient or fossil flora of Fuegia, for I owe to Mr. Darwin's kindness impressions of the leaves of three apparently distinct species of deciduous Beech, and which are mentioned in that gentleman's journal.

strait of Magalhaens to be the northern limit of the Fuegian Flora eastward of Port Famine, and have included in, or rather added to that Flora, all the known plants of the Pacific side of the Andes, reaching north to the Chonos Archipelago. The latter position is peculiar, in the *Beech* being there replaced, at the level of the sea, with other trees; by the sudden change in the aspect of the coast vegetation that the flora of Chiloe, immediately to the northward, presents; and by its being only a few miles beyond the "glacier-bound Gulf of Peñas," where perennial ice descends to the level of the ocean in a latitude nearly midway between the Equator and the Antarctic Pole.

The successive labours of Commerson, Banks and Solander, and of Menzies, early called the attention of Botanists to the singular aspect of the Fuegian Flora, apparently incompatible in its luxuriance with the rigour of the climate. The subsequent exertions of Captain King and Mr. Anderson, and of Darwin, during the voyages of Captain Fitzroy, of D'Urville, and the officers of our own late Antarctic Expedition, have nearly exhausted the Phænogamic productions. Much remains, however, to be done amongst the lower Orders, for the last-named expedition procured from a small island in the immediate vicinity of Cape Horn, more than twice as many Cryptogamic species as had been previously detected in the whole of Tierra del Fuego. These, however, hardly affect the general aspect of the vegetation, which may now be considered as satisfactorily known.

The Falkland Islands rank next in botanical importance to Fuegia. Though lying to the northward of the main body of that country, their vegetation is so influenced by climate and by some other peculiarities common to these islands and the Patagonian plains, that they produce no tree whatever. They are situated between the parallels of 51° and 53°, and the meridians of 57⅔° and 61½° west, and consist of an eastern and western island, nearly equal in size, and together forming an oval, whose axis lies east and west and extends about 100 miles. The general outline is jagged, like that of Fuegia, and similarly indented by deep inlets and ramifying bays; but their level or undulating surface, never rising above 2000 feet, and the geological formation, bear no resemblance to an archipelago formed by a submerged chain of mountains. Altogether, the Botanical and other characters of the Falklands are allied to the Atlantic coast of Patagonia, opposite to the strait of Magalhaens, from whence they are only 300 miles distant.

The most evident causes for the absence of trees in the Falkland Islands are the dislocation or removal of that group from the main land; their comparatively plane surface, everywhere exposed to the violence of the westerly gales, and more especially to the rapid evaporation and sudden changes in temperature and in other meteorological phenomena. The southerly and westerly winds are violent, cold, and often accompanied by heavy snow-storms; the easterly and northerly arrive saturated with warmer sea vapours, which, quickly condensing over the already chilled surface of the soil, form fogs and mists that intercept the sun's rays; whilst the north-westerly winds are singularly dry and parching, from the influence of the Patagonian plains over which they blow. Such sudden alternations from heat to cold, and

from damp to dry, are particularly inimical to luxuriant vegetation, and no foliage but perhaps the coriaceous growth of Australia could endure them. The characteristics both of Fuegia and Patagonia may be seen mingled in the Falklands, and except *Veronica elliptica* (Part I. p. 58), which is chiefly confined to the western coasts of the western island, the plants of both these countries appear together, overspreading the whole surface of the islands. Few species are peculiar, and no genus or order predominates to any remarkable extent, unless it be the *Gramineæ*: the species themselves are well marked and do not run much into varieties. Though the want of shade is unfavourable to the fruiting of *Mosses* and *Hepaticæ*, there are a considerable number of species of those orders, and some are identical with those of the American mountains and of Europe.

Bougainville was the first voyager and man of science who noticed the vegetable productions of the Falklands, the most remarkable of which are certainly the *Tussac Grass* and the *Balsam-bog* (*Bolax glebaria*). The first collection of importance was formed by M. Gaudichaud, under the following very peculiar circumstances.

M. Gaudichaud accompanied Admiral Louis de Freycinet, who sailed from France in the year 1817, in command of an expedition, composed of two corvettes, the 'Uranie' and 'Physicienne.' The objects of the voyage were entirely scientific, and the chief places visited were New Holland and the East Indian Islands to the north of that country, the South Sea Islands, Tierra del Fuego, and the Falklands. The magnetical observations, chiefly by Admiral Freycinet himself, were amongst the most valuable ever made in the Southern Hemisphere, previous to the voyage of the 'Erebus' and 'Terror,' and many other results of the expedition were of equal importance. After having nearly circumnavigated the globe, the navigators doubled Cape Horn in 1820, and regaining the Atlantic Ocean, naturally expected that the dangers incident to such a voyage were over. On preparing to enter Berkeley Sound, however, the 'Uranie' struck upon a hidden rock close to the shore, but on the lee-side of the island. If the usual wind and weather had prevailed on that occasion, the frigate must have been blown out to sea and probably all hands lost; the violence of the gales and boisterous ocean incident to that latitude often rendering the boats unavailable when most required. Providentially the elements allowed Admiral Freycinet's skill to be effectual in saving his ship, which he ran ashore in Berkeley Sound. Amongst the losses occasioned by this calamity was that of the greater part of the collections of the entire voyage, made by the indefatigable Gaudichaud; 1500 species alone escaping destruction. The probable value of the rest we may estimate from the excellent botanical notices of the various islands visited, which show the materials to have been very considerable, or such knowledge could not have been displayed. Especially we must applaud the persevering zeal with which this naturalist commenced forming a collection which constituted the foundation upon which all other floras of the Falklands have been raised.

The results of M. Gaudichaud's labours were first published in the "Annales des Sciences Naturelles," and afterwards in the botanical portion of Admiral Freycinet's voyage. The

late Admiral D'Urville visited these islands during Admiral Duperrey's voyage in the French corvette 'la Coquille,' and added some additional species to those of Gaudichaud, and these were described in the "Annales de la Société Linnéenne de Paris." More recently Mr. Darwin formed a small collection of Falkland Island plants, as did Mr. Wright, a mercantile gentleman, and Captain Sulivan, now commanding H. M. S. 'Philomel,' who had previously visited this group during Captain Fitzroy's voyage*. The 'Erebus' and 'Terror' remained in Berkeley Sound for the five winter months of 1842; during which year almost all the previously known species were gathered, with numerous others, especially Cryptogamia, by myself and Dr. Lyall, whose beautiful collection of the interesting *Algæ* of this group of itself forms an important addition to Antarctic Botany.

Considering the distance of the Falkland Islands from the continent, their size, the extent of surface covered with vegetation, and above all, their geological formation and the nature of their climate, the number of peculiar species is very insignificant; such circumstances generally accompanying or being indicative of a concomitant change in botanical features, specific difference itself being by some attributed wholly to the operation of these causes, and the inmutability of species thence called in question. The Falkland Islands appear ill adapted to the more striking vegetation of Fuegia or of Patagonia, if we may judge from the absence of trees and even of such bushes as *Berberis*, *Escallonia*, *Fuchsia*, *Ribes*, &c., which grow in the former country and to all of which the changeable nature of the climate is injurious; while, on the other hand, the mean temperature is too low for the *Leguminosæ*, *Malvaceæ*, and other predominant Orders of Patagonia. It is more remarkable that some of the plants of each are seen, composing together the whole vegetation, yet appearing unchanged by a climate that is certainly unfavourable to the general flora of those distant regions where these very species most abound. To conclude by an example, *Sisyrinchium* and *Oxalis enneaphylla* will not associate themselves with the *Tussac* and *Empetrum* in Cape Horn, nor are *Astelia* and *Caltha appendiculata* to be found in company with *Nassauvia* and *Calceolaria Fothergillii* on the coast of Patagonia, though all these may be seen growing side by side in the Falklands in the greatest profusion.

Immediately to the south of Cape Horn are groups of islands, and possibly a larger body of land. Vegetation in the Southern Hemisphere reaches the northern shores of these inhospitable spots, where, at a distance of no less than thirty-six degrees from the actual Pole and three degrees to the northward of the Antarctic circle, the flora of the south finds its extreme limit.

The South Shetlands have been visited by an American gentleman of scientific acquirements, Dr. Eights, who detected a small species of *Grass*, the *Aira antarctica*, Hook., (Icon. Plant. vol. ii. t. 150), the most Antarctic flowering plant hitherto discovered. One of the group, Deception Island, was explored by Captain Foster in H. M. S. 'Chanticleer,' and we

* Whilst this sheet is passing through the press I have received a collection from the Falkland Islands, containing some highly interesting plants, from W. Chartres, Esq., Surgeon of H. M. S. 'Philomel'.

gather from the account of Mr. Webster, the surgeon to that ship, that "no phenogamic plants, only a few lichens and sea-weeds," inhabit that dreary islet, although the temperature of its soil is raised by subterranean heat; its latitude is 63½ south, and longitude 60 west.

In January 1843 I landed upon a small islet, close to the main portion of Palmer's Land, in latitude 64° 12′ south, and longitude 57° west. It appeared to be the "ultima Thule" of southern vegetation; the soil hard frozen, except on the very surface where it was thawed by a sun-heat which raised the temperature to 46°, while the sea was encumbered with pack-ice and bergs; no flowering plants were to be seen, and only eighteen belonging to the Orders *Lichenes*, *Musci*, and *Algæ*. Beyond this latitude I believe there is no terrestrial vegetation.

The South Georgian group is situated about 1000 miles due east of Cape Horn, and exhibits a wholly different aspect from that land, being covered with perennial snows, and the harbours blocked up with everlasting glaciers; still, Captain Cook found a scanty vegetation, consisting of "a coarse strong-bladed grass, growing in tufts, wild Burnet, and a plant like moss, which springs from the rocks;" (vide Cook's 2nd voyage). The flora of South Georgia is probably intermediate in luxuriance (if such term may be used), between the Falklands and the South Shetlands, the proximity of the Antarctic Ice being influenced by that of the large bodies of land, it approaches nearer to South Georgia than to Fuegia, and renders that climate unsuited to support even a moderate vegetation.

Sandwich Land, discovered by Captain Cook, lies further south than South Georgia, and, like Palmer's Land, is encroached upon by the perennial ice of the Atlantic Ocean. That illustrious navigator mentions two hills clear of snow, and apparently covered with a green turf, but this is all we know of their productions.

Proceeding westward from Antarctic America, the next island that requires notice, as exhibiting an Antarctic vegetation, is Tristan d'Acunha. Though only 1000 miles distant from the Cape of Good Hope, and 3000 from the Strait of Magalhaens, the Botany of this island is far more intimately allied to that of Fuegia than Africa. Captain Carmichael's list (Linn. Trans., vol. xii. p. 483), contains twenty-eight flowering plants (I exclude *Sonchus oleraceus*); only one species of *Phylica*, and one *Pelargonium*, amounting to one-fourteenth of the whole, are Cape forms; whilst seven others, or one-fourth of the flora, are either natives of Fuegia or typical of South American Botany, and the *Ferns* and *Lycopodia* exhibit a still stronger affinity. There are some points in which the vegetation of Tristan d'Acunha resembles that of St. Helena and Ascension. Though these islands are separated from one another by nearly thirty degrees of latitude, they lie within eight degrees of longitude, and all are the exposed summits of ancient volcanoes, such as the highest peaks of the Andes might present, if that mighty chain were partially submerged*. The relation between the floras of Ascension and St. Helena† is

* The conjecture of these islands being the exposed culminating peaks of a submerged chain of mountains, receives confirmation from the circumstance of Sir James Ross having struck soundings in 16,062 feet in lat. 33° 21′ south, and long. 9° 4′ west, that is, nearly on a line between St. Helena and Tristan d'Acunha.

† The island of St. Helena has many claims to rank as one of the most interesting botanical stations known;

evident, though to enumerate them would be out of place here; those between the latter island and Tristan d'Acunha are indicated by the genera *Phylica* and *Geranium*, and also by some of the Ferns and *Lycopodia*: as, however, it is also through those genera that the botany of Tristan d'Acunha resembles that of the Cape, it may fairly be doubted whether the apparent affinity with St. Helena is not imaginary. It is a very remarkable circumstance that while these three islands all possess some of the features of the African Flora, the predominant ones are absent; thus, whilst the St. Helena Flora is allied, and exclusively so, to that of the Cape in *Geranium*, *Melhania*, and *Phylica*, it has no representatives of entire Orders, namely *Proteaceæ*, *Rutaceæ*, *Oxalideæ*, *Crassulaceæ*, *Ericeæ*, *Restiaceæ*, and many others, far more characteristic of the African vegetation than are any of the plants inhabiting St. Helena.

The other islands whose plants will find a place in this division of the 'Antarctic Flora' are situated south of the Indian continent, widely apart from the American, and so far as geographical position is concerned, belong to Africa or India; these are, Prince Edward's and Marion Islands, the Crozets, Kerguelen's Land, and the Islands of Amsterdam and St. Paul.

Of the two first-mentioned groups the vegetation is wholly unknown; the former, Prince Edward's and Marion, are small contiguous islets in the 47th degree of latitude and 38th of east longitude; they are of rather an undulating outline and evidently volcanic formation, from a little distance they appeared covered with grass. The Crozets are a group of much larger islands, situated in the 48th degree of latitude and between the 47th and 49th meridian, east of London: they are bold rocky masses, rising to a height of 6000 feet; some, though of considerable size, are quite inaccessible, and others enveloped by eternal fogs, whence

almost the whole of its native flowering plants and several of its genera being peculiar. Various causes have, within the memory of man, reduced this flora to a mere shadow of what it once was, for when the island was discovered, it is described as entirely clothed with forest. The greater part of this was said to be destroyed by the introduction of goats and pigs, and by the bark of the trees being stripped for tanning, so that the flora is consequently now very limited both in number of species and of individuals. During the interval that elapsed between two visits which I paid to St. Helena, one very peculiar native plant, the *Acalypha rubra*, had disappeared, and two other handsome shrubby species of *Melhania*, with particularly showy flowers, had very recently become extinct; whilst the existence of some *Wahlenbergiæ*, of a *Physalis*, and a few of the peculiar arborescent *Compositæ*, though thus far prolonged, is held upon a very precarious tenure. These plants are all well marked species, which on the destruction of the forests seem unable to accommodate themselves to their altered circumstances, perish, and are replaced by introduced species, exactly as is the case with various savage races of mankind, which do not suit themselves to the condition of the soil when altered by the European settler, but diminish in number and dwindle away even when violent measures have not been used for their extirpation. I may remark, that species in isolated islands are generally well defined; this is in part the natural consequence of another law which I have observed, that genera in islands bear a large proportion to the species, or in other words, that genera are small, seldom containing more than two or three species, and very frequently solitary representatives. It must be borne in mind that this well-marked character of the species in insular localities applies equally to mountainous as to planer islands. It might seem natural to suppose that a varied surface would have the effect of obliterating specific distinction, especially in small areas, as the Pacific Islands, the Galapagos, St. Helena, and the like, whose present contour is not the result of recent geological changes, and where time, the required element for developing such species as are the offspring of variation, has been granted.

the name of Hazy Island has been given to one of the largest, of which the rocky summit alone is seen standing out in bold relief above an almost perennial fog-bank. During our passage from the Cape of Good Hope to Kerguelen's Land, Sir James Ross endeavoured to effect a landing, first upon Marion Island and afterwards upon one of the Crozets, but most unfortunately for the interests especially of Botany, our efforts were frustrated by the tempestuous weather. In one night, during which the 'Erebus' was hove to for the purpose of landing upon Marion Island, she was blown sixty miles to leeward of it; she then bore up for the Crozets, to meet a similar mishap; on this occasion, having provisions to land for a party of miserable sealers, we again beat up to Possession Island, the easternmost of the group, and after the detention of nearly a week in the most inclement season and tempestuous ocean, only arrived at the time of the brooding of another storm, which rendered it highly imprudent for any boat to leave the ship in an open roadstead. The aspect of this island was, like all the others we sighted, dreary and inhospitable to the last degree; a narrow belt of green herbage skirted its shore, above a line of black basaltic cliffs, which formed the iron-bound coast; while higher again rose crater-shaped barren hills of blue-grey or brick-red coloured rocks, utterly destitute of vegetation and alike dismal to the eye and mind. These were the first Antarctic Islands we had seen, and few of us will forget the feelings to which their desolate aspect gave rise; sensations, which for intensity afford the strongest contrast with those which an English naturalist never fails to experience during his first ramble on some tropical shore.

M. de Jussieu had the kindness to show me a small pamphlet, containing a slight account of the Crozets, drawn up from information received through the captains of sealing ships. The vegetation is described as most scanty. From the short interview which we held with a party of sealers who had been left upon one of the group, I gleaned but little information; they told me the species were few, and the famous *Cabbage of Kerguelen's Land* not amongst them, though another "scurvy-grass" was abundant. The vegetation that our glasses enabled us to detect, formed, apparently, a matted carpet, extending from the shores upwards for a short distance, very similar to what we afterwards saw in Kerguelen's Land, though different from the long grass that appeared to clothe Prince Edward's Island. These two groups are situated only 800 miles south-east from the Cape of Good Hope, but being placed to the southward of the 40th degree of latitude they partake of the climate of the Antarctic Ocean. Their position between Fuegia and Kerguelen's Land and their formation being probably the same as the latter, I have little doubt their Flora, when known, will be found to prove characteristic of the extreme south of America and in no degree similar to that of Africa, with which they are even in closer proximity than is Tristan d'Acunha. Barren and inhospitable as are the shores of these islands, there are no spots on the surface of the globe whose botanical productions would be of greater interest to science, for their vegetation is wholly unknown, and is wanting to complete our otherwise pretty extensive acquaintance with the distribution of plants throughout the islands of the high southern latitudes.

Kerguelen's Land is the eastern limit to which the Fuegian Flora extends, and though placed within the 50th degree its desolate nature is proverbial. The Antarctic Expedition arrived there in May 1840, having been blown off its tempestuous coast twice, after approaching the land so nearly as to distinguish almost the nature of the vegetation which skirts the shores of the bays. The island presents a black and rugged mass of sterile mountains, rising by parallel steppes one above another in alternate slopes and precipices, terminating in frightful naked and frowning cliffs, which dip perpendicularly into the sea. The snow lying upon these slopes between the black cliffs gave a most singularly striped or banded appearance to the whole country, each band indicating a flow of volcanic matter, for the island is covered with craters whose vents have given issue to stream upon stream of molten rock. These are worn all along the coasts into abrupt escarpments, rendering a landing impracticable, except at the heads of the sinuous bays. One bluff headland to the north end of the island is a precipice, 700 feet high, and exposes such numerous sections of horizontal deposits of red, black, and grey volcanic matter that it is difficult to count them, though overlaying one another with perfect regularity and uniformity. Sterile as Kerguelen's Land now is, it was not always so, vast beds of coal are covered by hundreds of consecutive layers of igneous and other rocks, piled to a height of one thousand feet and upwards, upon what was once a luxuriant forest. Throughout many of the lava streams are found prostrate trunks of fossil trees of no mean girth, and the incinerated remains of recent ones, which had been swallowed up simultaneously with the fossil, and these occur in strata of various ages, so that it seems impossible to reckon the period of time that must have elapsed between the origin, growth, and destruction of the successive forests now buried in one hill. A section of such a hill would display coal-beds and shale resting upon a blue basalt, at the level of the sea, covered again with whinstone, whereon are deposited successive layers of volcanic sand, baked clay-stones, porphyries, and long lines of basaltic cliffs, formed of perpendicular prisms, regularly shaped like those of Staffa or the Giant's Causeway, and along which the traveller may walk even for a mile without ascending or descending fifty feet. To calculate the time required for the original formation and following silicification of one such forest, and to multiply that by the equal number of different superincumbent strata, containing remains similar to those displayed at the north end of Kerguelen's Land, would give a startling number of years, during which periods the island must have deserved a better name than that of "Desolation." And if to this be added the time requisite for the deposit of the arenaceous beds containing the impressions of *Fuci*, of the clays afterwards hardened by fire, and of the prismatic cliffs, which, with the arenaceous, indicate that the land was alternately submerged and exposed as often as these successive formations occur, such a sum would bespeak an antiquity for the flora of this isolated speck on the surface of our globe far beyond our powers of calculation. If from the narrow sphere of inquiry that a few miles in extent and 1000 feet of elevation in Kerguelen's Land afford we deduce such grand results, what must be expected from the investigation of whole continents, whose culminant peaks reach nearly 30,000 feet, surrounded by an ocean perhaps as elevated above

the land it rests upon, and presenting fossiliferous strata that we believe are deposited at even greater depths? On the other hand, referring to the island under consideration, as it now appears, we may regard it as the remains of some far more extended body of land. Position in longitude in the Southern Hemisphere appears to determine the amount of vegetation an island may possess. Of this we have an instance in South Georgia, and the reason is evident; the extension of the great continents is in longitude, and the climate and other features of the islands depend upon their proximity to the land, which modifies the desolating influence of the icy ocean. The time we have granted for the formation of the various strata composing Kerguelen's Land and the forests that successively decorated them, is sufficient for the destruction of a large body of land to the northward of it, of which St. Paul's Island and Amsterdam Island may be the only remains, or for the subsidence of a chain of mountains running east and west, of which Prince Edward's Island, Marion, and the Crozets are the exposed peaks. With regard to the botanical characteristics of Kerguelen's Land, full notices of them have been prepared for Sir James Ross's narrative of the Antarctic voyage, and the subject will be further treated in a work devoted to the distribution of vegetation in the southern regions.

The Islands of St. Paul and Amsterdam, hitherto ranked under no geographical or botanical regions, perhaps demand notice here. Though constantly sighted by outward-bound Indiamen and Australian ships, they have been rarely visited, and never by scientific persons, except those accompanying Lord Macartney's embassy to China, and very recently by my former companion and zealous cooperator in all scientific pursuits, Lieut. A. Smith, R.N. Some confusion still exists with regard to the names of these two islands, which are situated north-west of Kerguelen's Land, in the longitude of 78°, and the respective latitudes of 38 and 39°. The names of St. Paul and Amsterdam have been applied indiscriminately by various navigators, the latter I continue to give to the southern island, in accordance with Sir George Staunton's and with the recent south circumpolar charts, where, however, the southernmost island is represented as the larger instead of the smaller of the two. Both are no doubt of volcanic origin, though only Amsterdam is in a state of activity. The latter alone has been visited by Sir G. Staunton, who has published an excellent account of it, and by Lieut. Smith who had the kindness to forward me most interesting particulars regarding it, and a collection of all the plants he was enabled to detect there. No one reading Sir George Staunton's account, and especially after looking at his plans and sketches of Amsterdam Island, can fail to be struck with the similarity its most remarkable features present to those of Deception Island, one of the South Shetlands. They are of the same size; both are annular craters, open to the eastward, inclosing a deep lagoon with a conical hill on each side of the entrance; that at the northern end being the highest, and both are nuclei of heated matter, with a thin covering of soil, through which escape streams and springs of warm or boiling water. The general nature of the vegetation of Amsterdam Island is described by Mr. Smith to be a coarse tufted grass, which springing from a bed of fine black peat composed of decomposed fibrous vegetable

matter, everywhere covers a soil so heated that the roots cannot descend beyond a few inches. Sir G. Staunton mentions that changes in the level of the land at the mouth of the cove have occurred since 1697, when the island was landed upon by Van Vlaming, a Dutch commander. Since 1793, the period of Sir G. Staunton's visit to the island, half a century has elapsed, and the changes, if any, have been insignificant. The land may possibly be rising, though according to Van Vlaming it must have sunk since his time, when there was no communication between the sea and the lagoon, the intermediate causeway being at least five feet high. Staunton states the depth of water on the bar to be eight feet at high water, and Lieut. Smith as 7 ft. 4 in. at the highest spring tides. Nor does the temperature of the hot springs appear to have altered materially during the last fifty years, it then averaged 190°, and Mr. Smith found one that he tried to be 182° (though there are others where the temperature rises to 212°); the latter gentleman boiled both fish and rice in one of these springs close to the ocean's edge and they were well cooked in twelve minutes, thus confirming Sir G. Staunton's anecdote, that a person who had caught fish in the cold water of the lagoon could, with a slight motion of his hand, let it drop into a hot adjoining spring, when it would be boiled in fifteen minutes fit for eating (McCartney's Embassy, vol. i. p. 212), an account that has been treated as fabulous.

The island of St. Paul, only fifty miles farther north, has never been visited by a naturalist; it is mentioned by several authorities as low and undulating, covered with trees and shrubs, but with no traces of internal heat; Labillardiere, who passed this island in 1792, describes it as being in a state of combustion, but he doubts whether the fires were kindled by the hand of man, or were owing to subterranean heat. The former is most probably the case, for Mr. Smith, who lost no opportunity of gaining information about these curious islands, gives me the following statement, obtained from some sealers who had visited St. Paul's. "A variety of plants grow luxuriantly in the northern of these two islands, and trees several inches in diameter; there are no hot springs there, nor is its earth at all heated; vegetables may be cultivated with tolerable success; but this island is always most difficult to land upon." This precisely tallies with other scattered notices of St. Paul's that I have seen.

I shall conclude this long digression with a notice of the vegetable productions of Amsterdam Island. Sir G. Staunton mentions a *Lycopodium*, a *Marchantia*, and a long grass; to these I can now add another species of grass, a *Plantago*, *Colobanthus*, an *Azorella*? (or *Ranunculus*?) a *Cenomyce*, and several species of *Mosses*. The *Colobanthus* is typical of a southern or Antarctic Flora; but the grasses appear more characteristic of a warmer climate; from these materials I do not feel justified in referring the vegetation to any botanical region, but consider it probable that there may be a considerable proportion of forms indicative of a warm latitude, especially in St. Paul's.

The number of species in the present Part precludes the introduction of lengthened descriptions, even were these as requisite as I deemed them in the case of the more novel

productions of Lord Auckland's group. For the future volumes of this work, I shall, in describing the species, follow where it is practicable the plan pursued by Mr. Bentham, the excellency of whose specific descriptions is acknowledged.

Most of the materials in this Part were amassed by myself, with the kind aid of Captain Sir James Ross, Lieutenant Smith, Mr. Davies, and particularly of Dr. Lyall, to whose exertions I feel constrained throughout to acknowledge my obligations. For many important additions to the plants of Fuegia and particularly of the west coast of Patagonia, I am indebted to Captain King and Mr. Darwin*, both of whom most generously confided their collections to me for the purpose of examination and description. Captain King's is certainly the most complete flora ever formed in those countries, whether in number of species or specimens of the flowering plants. To Dr. Lemann I owe the use of another set of the same plants, gathered by Mr Anderson, the gardener who accompanied Captain King, and to Commodore Sulivan, a collection formed by his son, Captain Sulivan, during Captain Fitzroy's voyage. With all these advantages the materials for a Fuegian flora would still be incomplete, without the plants discovered by Menzies during Vancouver's expedition; and still more valuable is the access afforded by the kindness of Mr. Brown and Mr. Bennett, to the specimens, drawings, and manuscripts of Banks and Solander, who preceded all other botanists, except Commerson, in the investigation of Natural History in the high southern regions.

The collections of Banks and Solander, wherever formed and under whatever difficulties, are lasting proofs not only of the extraordinary zeal and ability of those distinguished individuals, but of the spirit which pervaded every member of the gallant band that Cook led in his path of discovery. Our knowledge of the Botany of New Zealand is still mainly due to the labours of the companions of Cook's first voyage, for no subsequent travellers or even residents in that country have made equally extensive collections; and that their researches in Tierra del Fuego were no less eminently successful, the constant mention of their names in this volume will abundantly prove. Valuable as the dried plants are, their utility is doubly increased by the excellent descriptions and by the beautiful coloured drawings executed on the spot, which accompany them, and were made at Sir Joseph Banks own expense. There are daily occurring instances, to the honour of the British nation be it mentioned, of individuals who undertake and conduct scientific expeditions on their own resources, and who return richly laden to reap the honours that await themselves as the projectors and commanders of their several efforts; but how few examples have we of men of birth and fortune, who like Banks will peril a life and spend a fortune as the zealous cooperator in an expedition not his own, and the main glory of which justly belongs to another. In scientific as in all other pursuits there are ever many to lead, but few who will stoop to be followers. This just tribute to the memory of Banks is peculiarly due from me, who owe so much to his labours in the Southern Ocean.

* Mr. Darwin's valuable herbarium is preserved in the Cambridge Museum, and it is to the liberality of the Rev. Professor Henslow that I am more immediately indebted for their temporary transference to my care.

It was during Cook's second voyage that he was accompanied by the two Forsters, men whose names are inseparably connected with the subject of Antarctic Botany. They visited New Zealand and Tierra del Fuego, making important collections at both, excellent drawings, and finally publishing two works, which as regards the plants of those countries, must ever be considered as classical; these are the "Characteres Generum Plantarum Maris Australis," and the "Prodomus Florulæ insularum Australium." Sets of the plants, the drawings, and collections are, as well as those of Cook's third voyage, deposited in the British Museum.

Cook's third voyage was not accompanied by any professed naturalist; all that we know of the flora of South Georgia, and, previous to the visit of the Antarctic Expedition, of the plants of Kerguelen's Land, we owe to Mr. Anderson, the surgeon of that expedition.

My own Herbarium of Falkland Island plants is particularly rich, and has also received accessions from Mr. Darwin, Captain Sulivan, Mr. Wright, and within the last few days from Mr. Chartres, Surgeon of H. M. S. 'Philomel,' now surveying these islands under the command of Captain Sulivan; to all of whom I here tender my sincere thanks.

I. RANUNCULACEÆ, *Juss.*

1. ANEMONE, *Haller.*

1. Anemone *decapetala*, Linn. *Mant.* 79. *DC. Syst. Veg.* vol. i. p. 200. *Prodrom.* vol. i. p. 19. *Hook. et Arn. Bot. Beechey*, p. 3. t. 1. *Delessert. Icones*, t. 16. *et* t. 17. *Hook. et Arn. in Bot. Misc.* vol. iii. p. 133. A. multifida, *Poiret, Suppl.* vol. i. p. 64. *DC. Syst. Veg.* vol. i. p. 209. *Prodr.* vol. i. p. 21. *Hook. Flor. Bor. Am.* vol. i. p. 7. *Torrey and Gray, Flora of North Am.* vol. i. p. 13. A. trilobata, *Juss. Ann. Mus.* vol. iii. p. 247. t. 21. f. 3. A. macrorhiza, *Dombey.* (fid. *DC.*). A. triternata, *Herb. Reg. Berol.* (fid. *Herb. Hook.*) *non Vahl.* A. bicolor, *Pœppig.* (fid. *Walpers*, vol. i. p. 22.).

Hab. Strait of Magalhaens; Port Famine; *Capt. King.* Cape Negro and Elizabeth Island; *C. Darwin, Esq.*.

Pilosa v. subsericea, spithamea ad 1½ ped. alta. *Radix* tuberosa. *Folia* 3–5-partita; segmentis linearibus v. cuneatis, crenatis incisis multifidisve. *Pedicelli* 1–3, unico nudo, cæteris involucellatis. *Petala* 5–10. *Receptaculum* globosum, demum elongatum, cylindraceum. *Achænia* lanata, stylo laterali filiformi.

Rather a variable species and having a very extended range throughout the American continent. I have no hesitation in referring to it all the species quoted above. In North America it abounds from the Arctic circle to the Colombia river on the west coast, and New York on the east. The specimens, especially those from the Rocky Mountains and from Lake Huron, differ from those of the strait of Magalhaens only in having rather larger and more deeply coloured flowers. In South America this plant re-appears in Peru (Dombey) and in Chili (Brotero) on the west side, and in South Brazil (Sellow) on the east, extending from each as far south as the Strait of Magalhaens. There are eight other South American species of *Anemone* described, which are—1. *A. triternata*, Vahl.; 2. *A. hepaticifolia*, Hook. Ic. Plant, t. 1; 3. *A. Jamesoni*, Hook. l. c. t. 670; 4. *A. æquinoctialis*, Pœppig.; 5. *A. Antucensis*, Pœppig.; 6. *A. Sellowii*, Pritzil; 7. *A. Helleborifolia*, DC.; 8. *A. sphenophylla*, Pœppig.; the last is pro-

bably a variety of *A. decapetala*, judging from the description given in Walpers. As nearly allied to this genus I may here mention the *Hamadryas andicola*, Hook. (Ic. Plant. t. 136), which is the *Hepatica? integrifolia*, H. B. K. I have examined specimens of this with ripe fruit: the carpels are few, large, and turgid, slightly hairy, the style long and filiform: the seed large, minutely punctate, and pendulous, by a short funiculus from a point a little below the apex of the cell, characters which will remove it from *Hamadryas*.

2. RANUNCULUS, *C. Bauh.*

* *Hecatonia, glaberrima, foliis lobatis v. dissectis.*

1. Ranunculus *biternatus*, Smith, in *Rees Cycl. DC. Syst. Veg.* vol. i. p. 236. *Prodr.* vol. i. p. 30. *Deless. Icon.* vol. i. t. 24. *Hook. Icon. Plant.* t. 497. R. exiguus, *D'Urv. Mem. Soc. Linn. Paris*, vol. iv. p. 615. *Gaud. in Freyc. Voy. Bot.* p. 136. R. flaccidus, *Banks et Sol. MSS. in Mus. Banks.*

Hab. Fuegia; *Commerson, Banks*, and *Solander. Darwin.* Hermite Island; *J. D. H.* Falkland Island; *D'Urville, Mr. Wright, Capt. Sulivan*, &c.

Rather a variable species, especially in size, in the breadth of the segments of the leaves, and in the number of petals. The *R. exiguus*, D'Urv., is a small state of this plant, common in the Falklands. The heads of carpels are very large in proportion to the size of the foliage, and especially of the flower.

2. Ranunculus *crassipes*, Hook. fil.; glaberrima, crassa et carnosa, caule repente, foliis longe petiolatis cordato-reniformibus trifidis trilobatis tripartitisve segmentis grosse inæqualiter 3–5-crenatis, pedunculis petiolo brevioribus, sepalis glaberrimis demum reflexis, petalis 4–6 obovato-spathulatis obtusis flavis, capitulo majusculo, carpellis plurimis late ovatis turgidis, stylo brevi recto. *An a* R. biternato *distincta?* (Tab. LXXXI.)

Hab. Kerguelen's Land; in moist places near the sea, abundant.

Caules spithamei, ad nodos radicantes, crassitie pennæ corvinæ. *Petioli* 1–4 unc. longi. *Folia* vario secta, plerumque trifida v. tripartita, segmentis late cuneatis. *Pedunculi* axillares, validi, erecti. *Flos* solitarius, inconspicuus. *Sepala* ovata, obtusa, membranacea. *Petala* 4–5, calyce longiora, 1½ lin. longa, 3-nervia, versus medium glandula opaca instructa. *Capitula* ut in *R. biternato* sed stylis strictis.

I advance this species with much hesitation, as it may prove only a variety of *R. biternatus*, from the largest states of which it is to be distinguished by its still greater size, more succulent habit, and especially by the more entire leaves, with much broader segments. These are, however, variable characters in both species, and some imperfect specimens of the former from Hermite Island assume a much larger size than others from the Falklands or from the northern parts of the Fuegia.

Plate LXXXI. *Fig.* 1, a flower; *fig.* 2, a petal; *fig.* 3, a stamen; *fig.* 4, an ovarium; *fig.* 5, a ripe carpel; *fig.* 6, the same cut open showing the seed:—all *magnified*.

** *Hecatonia, pilosa, foliis dissectis.*

3. Ranunculus *chilensis*, DC. *Syst. Veg.* vol. i. p. 236. *Prodr.* vol. i. p. 38. *Cham. and Schlecht. Animadv.* pt. 2. p. 27. *Hook. and Arn. Bot. Beechey*, p. 4. t. 3. *Bot. Miscell.* vol. iii. p. 134.

Hab. Cape Tres Montes and Chonos Archipelago; *C. Darwin, Esq.*

A very variable plant in habit (being either erect or creeping) and in the state of pubescence, in the size of the leaf and flower, and also in length of the petioles and peduncles: it is abundant throughout Chili, and possibly assumes a different form in a warmer latitude. In Mr. Darwin's specimens the flowers are small, scarcely 3–4 lines in dia-

Fink del.

Printed by Reeve Brothers.

Ranunculus crassipes Hook. fil.

Fitch del. et lith.

Printed by Reeve Brothers

Ranunculus sericocephalus. Hook. fil.

meter; in others from Valdivia they are double that size, and even larger have been gathered by Mr. Cruickshanks near Valparaiso. It does not appear to inhabit the east coast of Patagonia; but I have examined what I take to be a mutilated specimen, collected by Mr. Darwin in the central regions of that country near the river Santa Cruz, which flows from the Andes to the Atlantic.

4. RANUNCULUS *pedunculatis*, Sm. *in Rees Cyclop. DC. Syst. Veg.* vol. i. p. 294. *Prodr.* vol. i. p. 41. *Deless. Icon.* vol. i. t. 42. *Hook. and Arn. in Bot. Miscell.* vol. iii. p. 134.

HAB. Strait of Magalhaens; in the margins of woods; *Commerson.* Cape Negro; *C. Darwin, Esq.*

Closely allied to the last species, from which it seems constantly to differ in the narrow segments of the leaves, and the stouter and uniformly erect habit. The whole plant is more or less clothed with hairs, the Strait of Magalhaens specimens less so than those from more northern localities. It appears to be common in Chili on the western flanks of the Cordilleras, whence Dr. Gillies procured it at an altitude of 5000 feet, and Mr. Bridges upon the east slopes of that range, but it is not a native of the Atlantic side of South America. The *R. polypetalus*, Gillies MSS., is quoted in the Botanical Miscellany as a state of this species; it may be distinguished, perhaps specifically, by the smaller size of the leaves, which are all radical, and their segments so remote that the leaf is truly pinnate, the scape too is single-flowered, and it approaches more nearly to a Peruvian species.

5. RANUNCULUS *Maclovianus*, D'Urv.; acaulis v. subacaulis, appresse pilosus, foliis radicalibus longe petiolatis erectis reniformi-rotundatis trifidis trilobatisve segmentis grosse et acute dentatis, pedunculis folio brevioribus e ramulis abbreviatis ortis, sepalis villosis, petalis flavis spathulatis, capitulo globoso, carpellis glabriusculis, stylo brevi subuncinato. R. Maclovianus, *D'Urv. in Mem. Soc. Linn. Paris*, vol. iv. p. 615. *Gaud. in Freyc. Voy. Bot.* p. 196. R. parviflorus, *Gaud. in Ann. Sc. Nat.* vol. v. p. 105.

HAB. Falkland Islands; moist places, abundant; *Gaudichaud, D'Urville, J. D. H.* and *Dr. Lyall.*

Caulis nullus v. abbreviatus. *Folia* fere omnia radicalia; petioli 2–6 unc. longi, graciles, suberecti; lamina basi profunde cordata, $\frac{1}{2}$–$\frac{3}{4}$ unc. lata, pilis flavis sericeis utrinque tecta. *Pedunculi* 3–5, rarius solitarii, $\frac{1}{2}$–$\frac{1}{4}$ unc. longi, erecti, radicales v. e ramis abbreviatis orti. *Sepala* 5, ovata, obtusa, trinervia, demum subreflexa. *Petala* sepalis longiora, medio squama instructa. *Carpella* ovata, turgida, glabra v. laxe et sparse pilosa.

This plant is most nearly allied to the *R. Chilensis*, which I have noticed as a very variable species, but the present is smaller and more slender in all its parts, the leaves are all radical and it never creeps. Walpers (Repertor. vol. i. p. 44), erroneously quotes, as a variety of this, the *R. exiguus*, D'Urv., which is, however, certainly a state of *R. biternatus*, Sm.

6. RANUNCULUS *sericocephalus*, Hook. fil.; depressus, acaulis, totus pilis fulvis sericeis dense vestitus, foliis radicalibus stellatim patentibus orbiculari-reniformibus irregulariter 3–7-fidis lobis grosse crenato-dentatis, pedunculis brevissimis, floribus parvis inconspicuis, carpellis dense sericeis. (TAB. LXXXIII.)

HAB. Falkland Islands; on moist banks with the former; *Mr. Chartres, J. D. H.* and *Dr. Lyall.*

Planta pusilla, depressa, valde inconspicua, tota pilis flavis sericeis patentibus tecta. *Caules* brevissimi v. nulli. *Folia* stellatim patentia, petiolo $\frac{1}{2}$ unc. longo; lamina basi cordata, plerumque 5-fida, rarius trifida v. trilobata, subcoriacea, $\frac{1}{2}$ unc. lata. *Flores* inter folia subsessiles; pedicelli interdum e ramis brevissimis orti. *Sepala* late ovata, intus 3-nervia, patentia. *Petala* anguste spathulata, obtusa, flava, versus medium squama parva instructa. *Carpella* pilis patentibus obtecta; stylo brevi uncinato.

Though in many respects closely allied to the former, this seems to me quite a different species; while

often growing together, they do not appear to pass into one another. The small size, depressed and stellate habit, densely fulvous silky clothing, and especially the hairy carpels always serve to distinguish the present.

PLATE LXXXIII. *Fig.* 1, a flower; *fig.* 2, the same, laid open; *fig.* 3, front, and *fig.* 4, back view of a petal; *fig.* 5, young, and *fig.* 6, ripe carpel; *fig.* 7, the same cut open showing the seed:—all *magnified*.

*** *Hecatonia, foliis integris.*

7. RANUNCULUS *hydrophilus*, Gaud.; totus glaberrimus, caule gracili repente, foliis longe petiolatis natantibus elliptico-ovatis integerrimis 3–5-nervîis, pedunculis axillaribus petiolo brevioribus, floribus parvis, petalis flavis spathulatis, carpellis paucis, stigmate subsessili. R. hydrophilus, *Gaud. in Ann. Sc. Nat.* vol. v. p. 105. *Freycinet, Voy. Bot.* p. 136 and 475. *D'Urville in Mem. Soc. Linn. Paris*, vol. iv. p. 515. (TAB. LXXXII. Fig. B.)

HAB. Falkland Islands; in streams, lagoons, and pools of fresh water, abundant; *Gaudichaud, D'Urville, J. D. H.*

Caules 4–8 unc. longi, parce ramosi, ad axillas foliorum radicantes. *Folia* fasciculata, terna quinave, basi vaginantia; petioli 3–5 unc. longi, erecti, crassiusculi; lamina parva, ½ unc. longa, plerumque natans, plana, obtusa, nervis 3–7 parallelis. *Pedunculi* ex axillis foliorum solitarii, petiolo multoties breviores, sub ½ unc. longi. *Sepala* late ovato-rotundata, membranacea. *Petala* calyce breviora, 1 lin. longa, flava, spathulata, infra medium squamifera, basin versus attenuata. *Capitulum* parvum, globosum. *Carpella* pauca, pallide flava, oblique oblonga, obtusa, vix 1 lin. longa.

A very distinct species, both in habit and in other characters, perhaps most resembling *R. humilis*, Hook. and Arn. (Bot. of Beechey's Voy. p. 4.), which is a variety of *R. trisepalus*, Gillies; but the present is not branched upwards, the flowers are very different, and the carpels are not punctate. The leaves much resemble the upper floating ones of *Potamogeton heterophyllus*.

PLATE LXXXII. Fig. B.—*Fig.* 1, flower; *fig.* 2, petal; *fig.* 3, stamen; *fig.* 4, young carpel; *fig.* 5, ripe ditto; *fig.* 6, the same cut open:—all *magnified*.

8. RANUNCULUS *trullifolius*, Hook. fil.; glaberrimus, caulibus brevissimis sarmentosis, foliis radicalibus natantibus obovato-cuneatis integerrimis apicibus 3–5-dentatis, petiolis elongatis incrassatis superne attenuatis, pedunculis petiolo brevioribus, floribus inconspicuis, sepalis late ovato-rotundatis, petalis brevibus. (TAB. LXXXII. Fig. A.)

HAB. Falkland Islands; St. Salvador Bay, in a fresh-water lagoon.

Radix fibrosa, fibris crassis elongatis, e collo sarmenta elongata radicantia emittens. *Folia* omnia radicalia; petioli basi longe vaginantes, 4–6 unc. longi, teretes, antice canaliculati, validi, crassiusculi, superne gradatim incrassati, infra laminam attenuati; lamina ½–¾ unc. longa, abrupte truncata, grosse et inæqualiter 3–5-dentata, dentibus obtusis, 3–5-nervîis, nervis parallelis, luride viridis v. purpurascens. *Flos fructusque* ut in *R. hydrophilo* sed paulo majores et pedunculo crassiore.

Certainly more nearly allied to the former than to any other species of the genus; but quite distinct, of a larger size and more succulent habit, with leaves of a different form, abruptly truncate and lobed at the extremity.

PLATE LXXXII. Fig. A.

A. Ranunculus truncatus

B. Ranunculus hydrophyllus

W. Fitch del. et lith.

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Hamadryas tomentosa.

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3. HAMADRYAS, *Commers.*

Flores abortu dioici. *Sepala* 5–6. *Petala* 10–12, lineari-subulata, basi squama instructa.—Fl. Masc. *Stamina* plurima, filamentis filiformibus.—Fl. Fœm. *Ovaria* plurima, in capitulum globosum disposita, stylo uncinato terminata, unilocularia, unioviulata; ovulo e basi loculi erecto, funiculo brevi. *Carpella* sicca, ossea, indehiscentia.—Herbæ *Antarcticæ*, Ranunculo *affines*, *plus minusve sericeæ*. Scapi *ad apices* 1–3 *flores*, flore *inferiore sessili*. Sepala petalaque *extus pilosa*.

1. Hamadryas *Magellanica*, Lam.; plus minusve sericeo-pilosa, foliis rotundatis tripartitis lobis cuneatis inciso-partitis v. subintegris. H. Magellanica, *Lamarck, Dict.* vol. iii. p. 67. *DC. Syst. Veg.* vol. i. p. 226. *Prodr.* vol. i. p. 25. *Delessert, Icon. Select.* vol. i. t. 22.

Hab. Strait of Magalhaens; *Commerson*. Mount Tarn, altitude 2000 feet; *Capt. King, C. Darwin, Esq.* Staten Land, half way up the mountains; *A. Menzies, Esq.*

Var. *β*, *tomentosa*; foliis argenteo-lanatis lobis cuneatis subintegris. H. tomentosa, *DC. Syst. Veg.* vol. i. p. 227. *Prodr.* vol. i. p. 25.

Statura et præcipue pubescentia variat, nunc tota lana molli sericea obtecta, nunc glabriuscula v. sparse pilosa. *Scapus* folio æquans v. bis longior. *Sepala petalaque* extus glabra v. sericea.

These two varieties were found growing together both by Mr. Darwin and by Menzies, and are certainly not specifically distinct.

De Candolle places this genus doubtfully amongst the *Anemoneæ*; the ovules are, however, truly erect, and the petals being furnished with a small nectariferous scale, it ought to rank very near *Ranunculus*, from which it only differs in habit and in the numerous petals, and perhaps also in the persistent calyx. The form of the leaves seems to me to afford the sole tangible specific character, for the species vary in the hairiness of all their parts.

2. Hamadryas *argentea*, Hook. fil.; dense argenteo-lanata, foliis obovato-cuneatis basi attenuatis profunde trifidis lobis 3–5-fidis. (Tab. LXXXV.)

Hab. Falkland Islands; amongst grass; *Captain Sulivan, Lieut. Robinson, J. D. H.*

Radix fibrosa, fibris crassis descendentibus. *Folia* radicalia, basi fibris petiolorum vetustorum tecta; *petioli* graciles, erecti, 2–10 unc. longi, tomentosi; lamina 1½–2 unc. longa, coriacea, utrinque tomento argenteo-nitente vestita, segmentis obtusis. *Scapus* folio subæquilongus, crassitie pennæ corvinæ, plantæ masculæ gracilior et uniflorus, fœminæ biflorus. *Sepala* ovata, acuta v. acuminata, extus villosa. *Petala* sepalis duplo longiora, sub 4 lin. longa, lineari-subulata, gradatim attenuata, basi subito contracta, quasi unguiculata, supra unguem squamam appressum gerentia trinervia, membranacea, dorso hirsuta, pallide straminea. *Stamina* ♂, filamentis filiformibus. *Ovaria* ovata, superne in stylum uncinatum attenuata. *Carpella* turgida, ossea.

To all appearance this is a distinct species from the former, and certainly a very beautiful one; both Mr. Darwin's and Mr. Menzies' specimens, however, of *H. Magellanica*, var. *β*, are so similarly covered with silky wool, that the form of the leaves alone serves to distinguish them. It is rare in the northern part of the islands, and a copious suite of specimens might exhibit varieties still more like the Fuegian species. I detected only one individual with male flowers, it was smaller than the females, and had slender, single-flowered peduncles.

Plate LXXXV. Fig. 1, a male plant, of the *natural size*; 2, a flower of the same; 3, a petal; 4, a stamen: —*magnified*; 5, a female plant of the *natural size*; 6, a flower of the same; 7, an ovarium; 8, a carpel; 9, the same cut open longitudinally showing the erect seed:—*magnified*.

3. Hamadryas *Kingii*, Hook. fil.; foliis rotundatis 5–7-fidis v. multilobatis, lobis crenatis utrinque arachnoideis.

Hab. Strait of Magalhaens; Mount Tarn; *Capt. King.*

I have seen but two specimens of this very distinct species, they are male and female, the scape of the former, as in *H. argentea*, is one-flowered, that of the female has two flowers; the root is elongated and tuberous, throwing out stout fibres.

4. CALTHA, *Pers.*

1. Caltha *sagittata*, Cavanilles *Icon.* t. 414. *DC. Prodr.* vol. i. p. 44. *Gaud. in Ann. Sc. Nat.* vol. v. p. 105. *et in Freyc. Voy. Bot.* p. 136. *D'Urv. in Mem. Soc. Linn. Paris*, vol. iv. p. 615. *Hook. fil. in Bot. Mag.* t. 4056. C. multicapsularis, *Banks et Sol. MSS. in Bibl. Banks. Forster, in Trans. Linn. Soc.* vol. viii. p. 324.

Hab. Fuegia; *Commerson, Banks* and *Solander.* Port Famine; *Capt. King* and *C. Darwin, Esq.* Hermite Island; *J. D. H.* Falkland Islands; *Gaudichaud, D'Urville, J. D. H.*, &c.

Although placed by De Candolle in a separate section of the genus from *C. palustris*, this will rank more properly with that species than with the two following, especially as in its English representative there is an evident tendency in the lobes of the leaf to become inflexed. The present varies exceedingly in size, according to the moisture of the situation where it grows; the flowers are pale yellow, as in the following, and have a faint honey-like smell; the spices of the petals are slightly incrassated. A small state of it has been gathered by Mr. Bridges in Chili, in rivulets on the east side of the Andes, near the Volcano of Peteroa; it appears to be a peculiarly southern species, not inhabiting the level of the sea in a lower latitude than the Strait of Magalhaens.

2. Caltha (Psychrophila, DC.) *appendiculata*, Pers.; humilis, dense cæspitosa, dioica, foliis breviter petiolatis cuneatis trifidis segmentis bifidis basi appendiculis 2 linearibus instructis, pedunculo brevissimo, sepalis linearibus gradatim attenuatis, carpellis paucis. C. appendiculata, *Persoon, Ench.* vol. ii. p. 107. *DC. Syst. Veg.* vol. i. p. 307. *Prodr.* vol. i. p. 44. *D'Urville* et *Gaudichaud, locis citatis.* C. paradoxa, *Soland. MSS. in Bibl. Banks. Forst. in Trans. Linn. Soc.* vol. viii. p. 324.

Hab. Fuegia; *Banks* and *Solander.* Port Famine; *Capt. King* and *C. Darwin, Esq.* Hermite Island, from the sea to an elevation of 1200 feet; *J. D. H.* Falkland Islands; *Gaudichaud, D'Urville, J. D. H.*

Caules validi, dense cæspitosi, parce ramosi, subelongati, reliquiis vaginarum foliorum obtecti, hic illic fibras crassas emittentes. *Folia* crassa et carnosa; petiolo sub ½ unc. longo; vagina latissima, membranacea, superne utrinque in auriculam scariosam dilatata; lamina basin versus biauriculata, auriculis e pagina superiore ortis laminæ appressis linearibus emarginatis. Fl. Masc.—*Pedunculus* infra florem incrassatus, sulcatus. *Sepala* 5, patentia, lanceolata, in caudam membranaceam attenuata, pallide flava, purpureo-marginata. *Stamina* plerumque 9, quorum 4 breviora diutiusque maturata. *Ovaria* 5, abortiva. Fl. Fœm.—*Sepala* ut in mare sed erecta. *Stamina* rudimentaria. *Ovaria* 5–9, compressa, extus papillosa. *Ovula* 7–8. *Semina* sub 3, testa pallide brunnea nitida.

A highly curious plant and different, almost generically, from the former, in the dioecious flowers, the few stamens and ovaria, the form of the sepals (which are thick and terminated by a long membranous apex), and especially in having the appendices of the leaves placed on the surface of the lamina. The flowers are rather pretty, though small, being pale yellow and bordered with purple, they exhale a faint sweetish odour. Both this and the following constitute a material proportion of the bog-earth in some parts of Hermite Island, and the present alone in the Falklands, sometimes covering the ground in broad hard green tufts. They are eminently southern plants, not being found to the northward of Fuegia.

Caltha dioneæfolia Hook.

Finch. del.

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3. Caltha (Psychrophila, DC.) *dionæfolia*, Hook.; pumila, caulibus densissime cæspitosis ramosis, foliis orbiculari-ovatis bilobis lobis conduplicatis appendiculisque 2 appressis oblongis setoso-ciliatis papillosis, stipulis maximis concavis, sepalis 5 oblongo-ovatis crassis apicibus obtusis membranaceis, staminibus 5–7, ovariis 2–3. C. dionæfolia, *Hook. in Lond. Journ. of Bot.* vol. ii. p. 306. (Tab. LXXXIV.)

Hab. Fuegia; *Forster* and *C. Darwin, Esq.* Hermite Island, from the sea to an altitude of 1500 feet; *J. D. H.*

Caules conferti, 2–4 unc. longi, stipulis scariosis foliorum delapsorum tecti, ramosi, hic illic fibras crassas simplices emittentes. *Petioli* breves, validi, in vaginam maximam concavam cymbiformem dilatati; foliorum lamina vagina minor, sub 2 lin. longa, coriacea, superne læte viridis, papillosa, subtus pallidio, marginibus instar *Dionææ* ciliatis, appendiculis laminæ appressis, extus ciliatis. *Pedunculi* breves, crassi, subclavati, obtuse trigoni, ½ unc. longi. *Flores* hermaphroditi?, stellati, straminei, extus flavi. *Sepala* 5, patentia, elliptico-ovata, carnosa, apice obtuso membranaceo subappendiculato, nervis plurimis. *Stamina* plerumque 7, filamentis crassis purpureo-notatis, antheris majusculis. *Ovaria* 2–3, sæpissime 2, oblique ovata, obtusa; ovulis 2–3.

First detected, but never described, by Forster, from whose collections we have a very small specimen, intermixed with *Oxalis Magellanica*. In the southern parts of Tierra del Fuego it is a very common plant, covering large tracts of ground with a carpet of deep but shining green, upon which the stellate flowers have a very pretty appearance. The similarity between the leaf of this and of the *Dionæa muscipula*, "American *Fly-trap*," is very striking.

Plate LXXXIV. Fig. 1, back view, and 2, a side view of the leaf, petiole, and stipule or vagina; 3, front view of lamina, showing the appendages; 4, flower; 5, the same when fully expanded:—all *magnified*.

II. MAGNOLIACEÆ, *DC.*

1. DRIMYS, *Forst.*

1. Drimys *Winteri*, Forst. *Gen.* p. 84. t. 42. *Linn. Fil. Suppl.* p. 269. *Lamarck, Dict.* vol. ii. p. 331. *DC. Syst. Veg.* vol. i. p. 443. *Prodr.* vol. i. p. 78. D. punctata, *Lam. Dict.* vol. ii. p. 330. *Illust.* t. 494. f. 1. Winterana aromatica, *Soland. Med. Obs.* vol. v. p. 46. t. 1. Wintera aromatica, *Murray, Syst.* 507. *App. Med.* vol. iv. p. 557. *Humb. et Bonpl.* vol. i. p. 209.

Hab. Strait of Magalhaens and Fuegia; first noticed by John Winter who accompanied Drake's voyage in 1577, and since by all voyagers and collectors.

A very abundant tree throughout the western and southern parts of Fuegia, even in Hermite Island ascending to 1000 feet. The natives use the stems of the young trees, rudely fashioning them into flandles sometimes ten feet long, for their harpoons; but the wood is too soft and supple. The bark has proved a most useful stomachic and anticscorbutic to various voyagers, and especially to a portion of the crew of the 'Beagle' during Capt. King's arduous surveying voyage (vide King's Voyage, vol. i. p. 234.).

After a careful examination of a very extensive suite of examples, I have come to the conclusion that there is but one South American species of this genus. There is a dissimilarity in the form of the foliage, even between the North and South Fuegian states, the former having longer and more membranous leaves, differing in no respect from specimens gathered near Valparaiso by Gillies, Cuming, and Bertero, which generally pass under the name of *D. Chilensis*, DC. From Juan Fernandez again, the plants collected by the two last-mentioned travellers belong to the same species: though the leaves are generally more linear, they are not so much so as in some of the continental states. In Brazil, the variety, called *D. Grasatensis*, L. fil., is found over the whole of that vast empire, and equally occurs in New Grenada and the province of Santa Fé in Colombia. Mr. Gardner's number 5675 precisely accords

with the Juan Fernandez plant. St. Hilaire and Cambessèdes describe four and give figures of three varieties; herein they differ from Martius, who considers it the same as *D. Winteri*, but these authors do not state their reasons (*'Plantes Usuelles de Brésil,'* Tab. 26–28), and neither in the plates or descriptions do any characters appear which are not common to some of the Chilian and Fuegian specimens: their var. *sylvatica* coincides with Juan Fernandez specimens; the var. *montana* has smaller leaves than any found on the west coast of the continent. Chamisso and Schlechtendahl, in their notes upon the Mexican plant collected by Schiede and Deppe, refer it to *D. Granatensis* (Linnæa, vol. v. p. 210; vol. vi. p. 417; and vol. x. p. 214.); it is identical with *D. Mexicana*, Mor. and Sesse, (Pl. Mex. in DC. Prodr.), and some of the Chilian examples agree with Mexican ones. The effuse panicle and larger flowers are more characteristic of the northern states of the tree, but these peculiarities afford no specific distinction. A singular state, with small narrow leaves, remarkably revolute at the margins, has been gathered in Brazil by Claussen. The variations in the foliage are too gradual to admit even of the forms being grouped into varieties indicative of countries or of other peculiarities, and the glaucous hue of the under surface of the leaves is equally apt to mislead.

I feel little doubt that this plant extends over no less than 86° of latitude, forming at the southern limit of its growth one of the three trees that advance the nearest to the Antarctic circle, and reaching as high a latitude as any flowering plant, save the solitary grass of the South Shetland Islands. No vegetable production of its size affords a parallel case to this, either in America or any other country. Such an extraordinarily extended range is in part obviously due to some peculiarities in the form and surface of South America, where under every degree of latitude there are large areas either at the level of the ocean or at an elevation where such a tree can enjoy a climate that is equable. To the influence of the like causes I should attribute the specific identity between some high northern and southern species, which like the *Gentiana prostrata*, *Trisetum subspicatum*, and other plants mentioned in the former part of this work (Part i. p. 117), pass along the Andes from the northern temperate or frigid point to the southern extreme of America.

The *Drimys Winteri* is one of those plants which is represented by two closely allied species in other quarters of the globe, one in Tasmania, the *Tasmania aromatica*, and the *Drimys axillaris* in New Zealand. There are many instances of genera having representatives in those three botanical regions, the species being in general mutually more related than to any others, such are afforded by the genera *Fagus*, *Astelia*, *Abrotanella*, by shrubby *Veronicas* and many others. This similarity in some of the botanical productions of countries, otherwise unlike in vegetation, is far more remarkable than a total dissimilarity between lands so far separated, or even than a positive specific identity would be at first sight; because it argues the operation of some agent far above our powers of comprehension, and far other from what we commonly observe to affect geographical distribution.

III. BERBERIDEÆ. *Vent.*

1. BERBERIS, *Linn.*

1. Berberis *ilicifolia*, Forst.; erecta, spinis tripartitis, foliis obovatis grosse spinoso-dentatis, pedunculis folio brevioribus 4–6-floris, pedicellis elongatis subcorymbosis, floribus majusculis, baccis late ovatis lagenæformibus. B. ilicifolia, *Forst. Comm.* vol. ix. p. 28. *Linn. Fil. Suppl.* p. 210. *DC. Syst.* vol. ii. p. 12. *Prodr.* vol. i. p. 107. B. lagenaria, *Poir. Dict.* vol. viii. p. 619. (Tab. LXXXVI.)

Hab. Strait of Magalhaens on both sides and throughout Fuegia; *Commerson, Forster*, and all future collectors.

This is certainly the handsomest species of the genus, forming a straggling bush, eight feet high, with deep

Berberis ilicifolia.

Berberis microphylla.

Printed by Reeve Brothers

green shining leaves and very conspicuous golden yellow flowers. The wood is pale yellow, affording a gamboge coloured dye, the berries of a deep steel blue colour, and few in comparison to the size of the flower.

PLATE LXXXVI. *Fig.* 1, a flower; *fig.* 2, a petal and stamen removed from the flower; *fig.* 3, pistil:—all *magnified.*

2. BERBERIS *buxifolia*, LAM.; erecta, ramosa, spinis tripartitis, foliis oblongo-lanceolatis obovatisve planta juniore majoribus petiolatis pungentibus hic illic spinoso-dentatis seniore minoribus plerumque integerrimis acutis post anthesin coriaceis, pedicellis 1–3-floris, bacca globosa. B. buxifolia, *Lamarck, Illust.* t. 253. f. 3. *DC. Syst. Veg.* vol. ii. p. 15. *Prodr.* vol. i. p. 107. *Hook. et Arn. in Bot. Miscell.* vol. iii. p. 136. B. microphylla, *Forst. Comm.* vol. ix. p. 22. B. dulcis, *Sweet, Hort. Britann.* 2nd Series, vol. i. t. 100. B. inermis, *Pers.? Ench.* vol. i. p. 387. *DC. Prodr.* vol. i. p. 107.

HAB. Strait of Magalhaens and throughout Fuegia; *Commerson*, and all subsequent collectors.

This is a variable species, especially in the foliage, exhibiting a different aspect at different seasons of the year. In spring, when the flowering commences, fascicles of new leaves are produced, which are pale green, membranous, and entire; at this period the leaves of the former season begin falling while those of the present year gradually become larger, stiffer, coriaceous, and generally mucronate or pungent at the apex. They are not fully developed till autumn, when they are generally quite entire, attenuated at the base, and shortly petiolate, about half an inch long, rigid and coriaceous, reticulated on the upper surface; during the following spring these in their turn fall away. In seedling plants the leaves are larger than at any future time, on long petioles, broader, and here and there furnished with spinous teeth. The flowers are generally in threes, but sometimes solitary, pale yellow. The berries, about the size of a small pea, were much used for tarts by the officers of the 'Beagle' and found excellent. The *B. dulcis*, of Sweet, agrees with the common form of this plant, except that the flowers are larger in that author's figure and the pubescence of the pedicels not visible in the wild specimens. The *B. inermis* seems a variety, some of the specimens being quite unarmed; indeed the spines of this genus afford but an inconstant character.

PLATE LXXXVII. (Under the name of *B. microphylla*). *Fig.* 1, a flower; *fig.* 2, petal and stamen removed from the same; *fig.* 3, pistils:—all *magnified.*

3. BERBERIS *empetrifolia*, LAM. *Illustr.* t. 253. f. 4. *DC. Syst. Veg.* vol. ii. p. 16. *Prodr.* vol. i. p. 107. *Hook. et Arn. in Bot. Miscell.* vol. iii. p. 136.

HAB. Strait of Magalhaens; common in alpine woods; *Commerson.* Port Famine; *Capt. King.*

This species is more characteristic of a dry climate than of the moist wooded country of Fuegia and South-west Chili. The Strait seems to be its southern limit; it inhabits neither the east nor west coasts, but is confined to the Cordillera itself, from many elevated parts of which range we have received it, gathered by Gillies, Cuming, Macrae, and Bridges; it very probably therefore is a native of the whole length of that range, from lat. 34° to lat. 54°, descending to the level of the sea at Port Famine, to which point the mountains are continued in one unbroken chain.

IV. CRUCIFERÆ, *Juss.*

1. ARABIS, *L.*

1. ARABIS *Macloviana*, Hook.; glaberrima, basi ramosa, foliis inferne dentato-serratis radicalibus longe petiolatis oblongis obtusis caulinis sensim minoribus, supremis sessilibus lineari-oblongis, floribus in corymbum densum dispositis, sepalis obtusis extus hirsutis pedicellum æquantibus, petalis albis spathulatis, siliquis

racemosis erectis strictis linearibus stylo brevi valido terminatis, valvis concavis 3-costatis reticulatim venosis, seminibus plurimis ovato-oblongis, testa atro-brunnea grosse punctata. A. Macloviana, *Hook. Ic. Plant.* t. 498. Brassica Magellanica, *Poiret?* (fide Gaudichaud in *Ann. Sc. Nat.* vol. v. p. 105.), non *Juss. Pers. DC. et Delessert.* B. Macloviana, *D'Urv. in Mem. Soc. Linn. Paris*, vol. iv. p. 616. Erysimum Macloviánum, *Gay in Freyc. Voy. Bot.* p. 136.

Hab. Falkland Islands; abundant on the sea coast; *Gaudichaud, D'Urville*, &c.

Herba basi lignosa, coriacea, spithamea ad tripedalem, interdum subglaucescens. *Folia* radicalia 2–3 uncialia. *Flores* conferti, ampli. *Siliquæ* 1 unc. longæ, subtetragonæ.

In the form of the pod this is intermediate between *Barbaræa* and *Arabis*, the habit is however altogether that of the latter genus. The fact of a species of *Brassica* having been described as a native of the Strait of Magalhaens seems to have induced Gaudichaud to refer his probably incomplete specimens of this plant to it. D'Urville afterwards retained the generic name, but constituted this a new species. That the specimens of the former, and possibly of the latter voyager also, were incomplete, is evident from M. Gay's referring it to the genus *Erysimum*, from which as from *Brassica* it is far removed, though in the form of valves of the pods and habit it bears a similarity to some species of the first named genus.

2. CARDAMINE, *L.*

1. Cardamine *hirsuta*, Linn., *Sp. Pl.* 915. *D'Urville in Mem. Soc. Linn. Paris*, vol. iv. p. 616. *Gaudichaud in Freyc. Voy. Bot.* p. 137. *Hook. et Arn. in Bot. Miscell.* vol. iii. p. 137. *Fl. Antarct.* part i. p. 5. C. antiscorbutica, *Banks et Soland. MSS. in Bibl. Banks.* C. glacialis, *DC. Syst. Veg.* vol. ii. p. 264. *Prodr.* vol. i. p. 153. C. propinqua, *Carmichael, in Linn. Trans.* vol. xii. p. 507. Sisymbrium glaciale, *Forst. Comm. Goett.* vol. ix. p. 32.

Var. *nivalis*; foliis majoribus, pedicellis siliquisque elongatis erectis, stigmate sessili. C. nivalis, *Gill. MSS. Hook. et Arn. in Bot. Miscell.* l. c.

Hab. Fuegia, the Falkland Islands, and Tristan d'Acunha; abundant, especially near the sea. Var. *β*, in various situations with the former; *Forster, Banks* and *Solander, Capt. Carmichael*, &c.

After what is said respecting this plant in the first part of the present work, it will not excite surprise that I now consider all the species quoted above as states or varieties of the universally diffused *C. hirsuta*. I have in vain sought for specific characters amongst the numerous specimens now before me, gathered in many parts of Chili, Patagonia, and Fuegia, at different positions on the coast and various elevations on the mountains. The ordinary form, which bears generally the name of *C. glacialis*, is a small, glabrous or slightly hairy plant, from 2–6 inches high, sparingly branched, with the branches leafy or naked, sometimes of a robust habit. Leaves with 3–5 pair of sinuated leaflets, the terminal one larger, cordate or attenuated at the base. Siliquæ on pedicels from two to three-quarters of an inch long, erect, about an inch long, with acuminated or rather obtuse styles, which are sometimes so short that the stigmata are nearly sessile. From the same locality, however, different specimens vary much, and when growing in a sandy soil the roots become tuberous and the whole plant often hairy. In moist situations the stems are leafy upwards and more succulent, resembling the Campbell's Island variety *subcarnosa* (vol. i. p. 5), and I have gathered individuals of a very small size on the hills of Hermite Island, with single pairs of leaflets, answering to the *C. glacialis*, *β* of DC., and to Buenos Ayres specimens in Herb. Hook. Mr. Darwin has collected a form near Valparaiso, which is not distinguishable from a large state of the plant that inhabits the Island of Arran in Scotland; it is the *C. sylvatica* and also *Sisymbrium Nasturtium* var. *Chilense*, of Bertero. Some of the Falkland Island specimens again, are identical with others gathered in Iceland, and as is the case in the Northern Hemisphere, the flowers produced in the colder latitude are generally the largest. I am not prepared to say how far the *C. debilis*

Cardamine geranifolia D.C.

Fitch del. et lith.

Printed by Reeve Brothers

of New Zealand and a Tasmanian species, may ultimately prove distinct from this plant, which, besides being universally distributed throughout Europe, is abundant in North America under the names of *C. hirsuta*, *C. Pennsylvanica*, *C. Virginica*, &c., whence it probably passes along the Andes into South America, for we have specimens from Colombia. It is likewise an inhabitant of the Pacific Islands, of Ceylon and the Indian Peninsula, and of the Island of Mauritius.

The other Chilian species of this genus are: 1. *C. affinis*, Hook. and Arn. (Bot. Miscell. vol. iii. p. 137), this has the general appearance of *C. hirsuta*, but the flowers are considerably larger and the pods gradually acuminated into long styles, (a native of Conception); 2. *C. tenuirostris*, Hook. and Arn. l. c., similar to the last, but the pods are larger, the leaves more numerous and cut into many linear segments, (Conception); 3. *C. tuberosa*, DC. (Syst. vol. ii. p. 254; Deless. Icon. vol. ii. t. 29), this has simple large and orbicular leaves, cordate at the base; the tuberous root in the genus frequently is owing to local causes (Valparaiso); 4. *C. Chilensis*, DC., l. c., has the leaves entire or with one small lobe at the base, elliptical, obovate, and obtuse, (Chili, Bertero); 5. *C. chenopodiifolia*, Pers. (DC. Prodr. vol. i. p. 149), it and the preceding belong to the entire-leaved section; the present has the habit of *Arabis Macloviana*, but the valves of the pods are plane and entirely nerveless (it grows near rivulets on the Andes, altitude 8000–10,000 feet (*Bridges*); 6. *C. flaccida*, Cham., Bertero's imperfect specimen bearing this name (Mus. Brit.) with the following note, "an nova species? *C. macrorhiza*, Bert., MSS." appears not to be a *Cardamine* at all.

2. CARDAMINE *geraniifolia*, DC.; glaberrima, v. parce pilosa, radice lignosa, caule erecto subramoso folioso, foliis radicalibus longe petiolatis bipinnatisectis pinnulis petiolulatis late ovatis trilobis tripartitisve segmentis grosse dentatis dentibus obtusis subacutisve, floribus majusculis in corymbum pauciflorum dispositis, sepalis pedicellum æquantibus, petalis amplis obovato-spathulatis albis v. pallide roseis, siliquis.....? (TAB. LXXXVIII.) C.? geraniifolia, *DC. Syst. Veg.* vol. ii. p. 268. *Prodr.* vol. i. p. 153. Sisymbrium geraniifolium, *Poiret, Dict.* vol. vii. p. 218.

HAB. Strait of Magalhaens; *Commerson.* Port Famine; *Capt. King.* South part of Fuegia; *C. Darwin, Esq.* Hermite Island; *J. D. H., Mr. Davis.*

Spithamea et ultra, erecta, fiaccida, subsucculenta, hic illic parce pilosa, rarius glaberrima. *Radix* majuscula, elongata, cylindracea. *Folia* radicalia 4–8 uncialia, petiolo gracili; lamina circumscriptione oblonga, pinnatisecta, pinnis plerumque 5–7 patentibus inferioribus pinnatisectis; pinnulis ternatim sectis, membranaceis, 3–5 lin. longis, segmentis ultimis varie incisis dentatisve: folia caulina radicalibus similia, pro planta maxima. *Flores* magnitudine *C. pratensis*.

In Peru this very distinct species is replaced by two or three similar, of which one grows at an elevation of 10,000–12,000 feet on the Andes. They are more nearly allied to the *C. chelidonia*, Tenore, of Italy, than to any other of the genus.

PLATE LXXXVIII. *Fig.* 1, flower; *fig.* 2, petal; *fig.* 3, stamen and pistil:—*magnified*.

3. DRABA, *L.*

1. DRABA *incana*, Linn., *Sp. Pl.* 897. *Sm. Engl. Bot.* t. 888.

Var. *Magellanica*; foliis integris, siliculis planis velutinis in stylum brevem attenuatis. Draba Magellanica, *Lam. Dict.* vol. ii. p. 328. *DC. Syst.* vol. ii. p. 349. *Prodr.* vol. i. p. 170.

HAB. Strait of Magalhaens, by the margins of alpine woods; *Commerson* (in Herb. Hook.).

The only specimen of this plant that I have seen was derived from the Herbarium of M. Gouan, and is marked by him as received from Commerson; it is quite undistinguishable from *D. incana*, under which name, I, along with Torrey and Gray in the Flora of North America, include *D. confusa*, Ehrh. The specimen is about 8 inches

long and consists of a single stem (probably one of several from the same root) bearing linear, obtuse, and entire radical leaves, scarcely an inch long; the ascending portion is erect and scarcely branched, with three sessile, ovato-oblong leaves; the raceme 3 inches long; pods erect, 4 lines long and less than one in breadth, borne upon stout pedicels shorter than themselves; seeds immature, small, pale red brown. In this genus, characters taken from a solitary though complete specimen are invalid, and since it is undistinguishable from some North American and European states of *D. incana*, I am obliged to unite it with them; for I can find no reason to suppose that they will eventually prove distinct.

It is very singular that this plant, apparently identical with one so abundant throughout the Arctic regions and the elevated mountains of the north temperate zone, should not have been seen in the southern by any collectors save Dr. Gillies, who is stated (Bot. Miscell. vol. iii. p. 138), to have found a solitary specimen on the Andes of Mendoza, and Commerson. It certainly does not appear amongst the plants of the Colombian Andes that have been published by Humboldt, or more recently discovered by Col. Hall and Professor Jameson. Variable as the species of this genus are in the Northern Hemisphere, they are equally so in the Southern; still, as they seem to present tangible characters, I have availed myself of them here in drawing up the subjoined list of the South American species known to me*. With regard to the sections proposed for these twenty species, they are tolerably

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* DRABA, *L.*

§ I. *Racemo inter folia summa sessili.*

1. D. *cryptantha*, n. sp.; cæspitosa, ramosa, tota incano-tomentosa, foliis imbricatis obovatis obtusis, racemo foliacco abbreviato inter folia suprema sessili pauciflore, floribus parvis brevissime pedicellatis, petalis spathulatis albis unguiculatis, siliculis longe pedicellatis ovatis incanis stylo brevi terminatis.

Hab. Peru; Cerro Pasco; *Matthews* (v. 942).

Caules robusti ½–2 unc. longi. *Folia* ¼ uncialia, ramis appressa. *Flores* inconspicui. *Sepala* ¼ lin. longa, oblonga, obtusa. *Petala* sepalis vix longiora, apice emarginata. *Silicule* 2½ lin. longæ; seminibus parvis rufo-brunneis.

§ II. *Subacaules v. caulibus cæspitosis, pedunculo nudo, floribus corymbosis, stylo brevi.*

2. D. *arctioides*, H. B. K.; *Nov. Gen. et Sp. Amer.* vol. v. p. 77. t. 435.

Hab. Andes of Colombia; Antisana, 10,800 feet; *Humboldt and Bonpland.* Pichincha, 15,000–16,000 feet; *Professor Jameson*; *Hartweg, in Herb. Hooker* (n. 885.)

3. D. *obovata*, Benth.; *Plant. Hartweg.* p. 159. n. 885.

Hab. Andes of Colombia; Antisana, 15,000 feet; *Hartweg*, (n. 885) *in Herb. Bentham.*

The species in the Hookerian Herbarium, received as n. 885, from M. Hartweg, is the same as Professor Jameson's *D. arctioides* and Humboldt's figure; but it is not the *D. obovata*, n. 885, of Mr. Bentham's herbarium, apparently a very different species.

4. D. *depressa*, n. sp.; cæspitosa, incano-tomentosa, caulibus brevibus prostratis ramosis foliosis, foliis confertis obovato-spathulatis apice rotundatis integerrimis, racemis abbreviatis folia summa paulo superantibus, sepalis late oblongis dorso pubescentibus, petalis flavis, pedicellis fructiferis elongatis, siliculis latissime ovato-rotundatis acutis, stylo brevi, valvis planiusculis incanis, seminibus majusculis late obovatis.

Hab. Colombia; Chimborazo, 17,000 feet; *Col. Hall.*

A D. *cryptantha*, cui proxima, differt statura, racemo elongato, floribusque ter majoribus; ad D. *arctioidem* statura accedit, sed folia incana obtusa patentia et laxius imbricata, siliculæ minores latiores caulesque prostrati.

natural, the styles and foliation forming very evident and nearly constant characters; though *D. cryptantha*, in having the flowers entirely sessile amongst the leaves, stands alone in the genus: unfortunately the specimens of this are not

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5. D. *siliquosa*, n. sp.; caule brevissimo basi ramoso, foliis versus apices ramorum rosulatis lineari-obovatis villoso-sericeis, pedunculo incano sursum pedicellis sepalisque dorso hirsutis, floribus in-corymbum subcapitatum nudum dispositis parvis albidis, petalis elongato-spathulatis unguiculatis retusis, siliquis linearibus obtusis glaberrimis, stylo nullo.

Var. β, *Antisana*; foliis majoribus laxius confertis obtusis.

Hab. Colombia; Cotopaxi, 13,000 feet; *Professor Jameson*. Var. β, on walls at the Hacienda of Antisana, *Professor Jameson* (n. 28.).

* *Radix* descendens, multiceps. *Folia* ½ (in var. β 2) unc. longa. *Pedunculi* 1½ unciales, simplices, nudi. *Siliquæ* ¼ lin. longæ, lineares; valvis planis, sæpe purpureis; seminibus oblongis, rufo-fuscis.

6. D. *Macleani*, n. sp.; incano-tomentosa, caule brevissimo diviso, foliis confertis obovato-oblongis obtusis, corymbo subcapitato nudo, floribus parvis breviter pedicellatis albidis, siliculis glaberrimis ovatis in stylum brevissimum attenuatis, valvis planis.

Hab. Andes of Peru; *J. Maclean, Esq.*

A priori differt foliis incano-tomentosis, formaque valde diversa silicularum attenuatarum.

7. D. *affinis*. n. sp.; caule brevissimo diviso, foliis confertis patentibus obovato-lanceolatis subacutis sericeo-hirsutis, pedunculo puberulo, floribus corymbosis subcapitatis parvis, siliculis pubescentibus pedicellatis elliptico-oblongis stylo brevissimo terminatis, valvis subconvexis.

Hab. Colombia; Hacienda de Antisana, on old walls, at an elevation of 13,400 feet; *Professor Jameson*.

D. *siliquosæ* proxima siliculis latioribus brevioribus pubescentibusque præcipue differt. Hæc cum tribus precedentibus habitu et statura omnino convenit.

8. D. *Falklandica*, n. sp.; vid. supra.

Hab. Falkland Islands; *Lieut. Robinson, R.N.*

Forma siliculæ D. *affini* proxima, sed magnitudine, valvis convexis, stylo longiore, siliculisque racemosis differt.

9. D. *funiculosa*, n. sp.; vid. supra.

Hab. Falkland Islands; *J. D. H.*

Species nulli arcte affinis.

10. D. *australis*, n. sp.; annua, gracilis, caule simpliciusculo patenti-piloso, foliis radicalibus paucis rosulatis oblongis oblongo-lanceolatisve plerumque integerrimis obtusis supra subsericeo-hirsutis subtus stellatim pubescentibus, pedunculis glaberrimis nudis pauciforis, floribus albis pedicellatis, pedicellis fructiferis filiformibus silicula glaberrima lineari-oblonga utrinque obtusiuscula ¼ brevioribus, valvis planis, seminibus plurimis parvis. D. australis, *Brown, MSS. in Herb. Banks*.

Hab. Patagonia; *Mus. Banks*. Bahia Blanca; *C. Darwin, Esq.*

Species D. *lineari*, Boiss., D. *cuneifoliæ*, Nutt., et D. *micranthæ*, Nutt. simillima.

in fruit. In the second group the scape is entirely naked and the flowers are more or less corymbose, all have short styles and the *D. arctioides* and *D. siliquosa* are similar to the *D. Aizoon* in general appearance. The plants included

§ III. *Caulescentes; scapo foliato, racemis post anthesin elongatis, foliis radicalibus caulinis diversis.*

11. D. *radicata*, n. sp.; incana, caule brevi lignoso subdiffuse ramoso, foliis confertis lineari-obovatis v. spathulatis obtusis, scapo gracili nudo v. unifoliato, floribus subcorymbosis majusculis, petalis flavis calyce pubescente duplo longioribus, siliculis erecto-patentibus ellipticis utrinque attenuatis puberulis pedicello longioribus, stylo gracili.

Hab. Colombia; Andes of Quito, altitude 12,000 feet; *Professor Jameson* (n. 153).

Radix elongata, lignosa, ramosa, multiceps. *Caules* 1–2 uncialcs, versus apices foliosi. *Folia* ½–¼ uncialia, patula, pube stellata. *Scapi* 1–2 unc. longi. *Flores* magnitudine varii. *Petala* sub 3 lin. longa, unguiculata; lamina patente, rotundata. *Siliculæ* ¼–½ lin. longæ; valvis planis; seminibus majusculis, late obovatis, atro-fuscis.

12. D. *grandiflora*, Hook. and Arn.; incano-tomentosa, caulibus elongatis foliosis subramosis, foliis patentibus lineari-oblongis lanceolatisve integerrimis v. obscure dentatis, scapo nudo v. folioso, floribus amplis pedicellatis, petalis albis calyce plus duplo longioribus, siliculis ellipticis puberulis plerumque tortis utrinque attenuatis pedicello brevioribus stylo elongato terminatis, seminibus 12–20 quoque loculo. D. grandiflora, *Hook. et Arn. in Bot. Misc.* vol. iii. p. 137. *sine descript.*

Var. *β*; caule simpliciusculo, scapo nudo, siliculis glabriusculis subobtusatis pedicello brevioribus. D. grandiflora, *Hook. et Arn.; Benth. in Plant. Hartweg.* p. 159. n. 883.

Hab. Colombia; *Mr. Lobb.* Chimborazo, 14,000 feet; *Professor Jameson.* Var. *β*, Chimborazo; *Professor Jameson, Hartweg*, n. 883.

Caules 3–4 uncialcs. *Folia* uncialia, in petiolum attenuata. *Flores* magnit. D. *violaceæ*. *Siliculæ* plerumque ½ unc. longæ. D. *violaceæ* proxima sed ad hanc sectionem relata obscapum (præcipue in var. *β*), elongatum, a caule distinctum, racemumque nudiusculum.

13. D. *incana*, vid. supra.

Hab. Strait of Magalhaens; *Commerson.*

14. D. *Gilliesii*, Hook. et Arn. in *Bot. Misc.* vol. iv. p. 137.

Hab. Chili; on the Andes; *Gillies, Cuming, Reynolds, Bridges.*

15. D. *cheiranthoides*, n. sp.; radice magna fusiformi, foliis radicalibus longissime lineari-lanceolatis sinuato-dentatis utrinque stellatim scaberulis caulinis multo minoribus, scapo ascendente puberulo subramoso, racemo elongato, floribus amplis aureis, pedicellis fructiferis elongatis patentibus, siliculis obovato-oblongis utrinque attenuatis in stylum elongatum desinentibus, valvis convexiusculis glabriusculis, seminibus paucis majusculis atro-fuscis.

Hab. New Grenada; Sierra Nevada, near the snow; *Purdie.*

Radix pollicem crassa, 3–4 unc. longa. *Folia* 3–5 uncialia, vix ½ unc. lata, fasciculata, longe petiolata, flaccida. *Rami* seu scapi pedales, foliosi, divisi. *Flores* magnitudine et colore *Cheiranthi ochroleuci*. *Pedicelli* fructiferi stricti. *Siliculæ* ¼ unc. longæ, pedicello ¼ breviores, sub lente puberulæ. *Semina* pro genere maxima, 2 vel 3 quoque loculo, 1 lin. longa, compressa.—Habitu ad *Vesicariam utriculatam* accedit, sed stamina omnia vere edentula, silicula elliptica et semina exalata.

16. D. *volcanica*, Benth.; *Plant. Hartweg.* p. 82. n. 571.

Hab. Colombia; Volcan de Agua; *Hartweg*, n. 571.

in the third group are scapigerous, but the peduncle is more or less leafy and the flowers racemose, the radical leaves are distinct from the cauline. The last division differs from the former only in forming shrubs, the branches being leafy throughout their length, an artificial character, but sufficiently available so far as the included species are concerned.

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17. D. *Tolucensis*, H. B. K., *Nov. Gen. et Sp. Plant. Am.* vol. v. p. 78.

Hab. Mexico; *Humboldt* and *Bonpland*. Oaxaca, 12,000–18,000 feet; *Gilcotti*.

18. D. *Jorullensis*, H.B.K., l. c.

Hab. Mexico; Jorullo; *Humboldt* and *Bonpland*.

An hujus sectionis?

§ IV. *Fruticulosæ, caule e basi ramoso, ramis foliosis, foliis radicalibus a caulinis non distinguendis.*

19. D. *violacea*, DC.; D. Bonplandiana, H. B. K., l. c.

Hab. Colombia; Assuay, 13,000–14,000 feet; *Humboldt* and *Bonpland*, *Professor Jameson*.

Fruticulus pedalis. *Flores* subcorymbosi, magnitudine et colore variabiles. *Pedicelli* fructiferi silicula breviores. *Siliculæ* lineari-ovatæ, incano-tomentosæ, in stylum gracilem gradatim attenuatæ. *Semina* plurima, oblonga, atro-fusca.

20. D. *alyssoides*, H. B. K., l. c. *non Benth. Plant. Hartweg. Hook. et Arn. Bot. Miscell.* vol. i. p. 126. t. 32.

Hab. Colombia; Province of Pasto; *Humboldt* and *Bonpland*. Summit of Pichincha and Pillzhum; *Professor Jameson*.

Flores albi, ampli. *Siliculæ* longiores stylique breviores quam in precedente. *Semina* parva.

I have retained the name given to this plant in the 'Botanical Miscellany,' (vol. iii. p. 137), and also so called by Professor Jameson. Mr. Bentham has considered my D. *Hallii* as the D. *alyssoides* of Humboldt and Bonpland, whose specific character does not allow of my deciding the question.

21. D. *Hallii*, n. sp.; fruticulosa, ramosa, incano-pubescens, foliis radicalibus nullis caulinis sessilibus lineari-oblongis oblongo-obovatisve remote dentatis supra sericeo-hirsutis subtus stellatim tomentosis, racemis elongatis, floribus amplis albidis, pedicellis basi bracteatis fructiferis erecto-patentibus silicula brevioribus, siliculis lineari-oblongis in stylum brevem attenuatis, valvis planiusculis pubescentibus, seminibus plurimis majusculis. D. alyssoides, *Benth. Plant. Hartweg.* p. 159. n. 884.

Hab. Colombia; Chimborazo, Pichincha, and Antisana, near the snow limit; *Col. Hall*, *Professor Jameson*, *Hartweg*.

Pedalis et ultra, vage ramosa, caulibus basi nudis. *Folia* 1–3 uncialia. *Siliculæ* forma variæ, plerseque ½ unc. longæ, lineari- v. ovato-oblongæ, glabriusculæ, interdum lineares et ¾ unc. longæ.

22. D. *Arbuscula*, n. sp.; fruticulosa, stellatim pubescens, ramosa, ramis adscendentibus inferne lignosis nudis superne foliosis, foliis parvis imbricatis obovatis obtusis, petiolis vaginantibus dilatatis glaberrimis, floribus flavis, siliculis pedicello brevioribus adscendentibus anguste elliptico-ovatis in stylum brevem attenuatis, valvis planis glabriusculis, seminibus plurimis majusculis.

Hab. Caracas; *Linden* (n. 439).

Caulis basi crassitie pennæ anatinæ, superne in ramos plurimos adscendentes fastigiatos divisus. *Rami* basi nudi, foliis delapsis, cicatricati; ramulis 2–3 uncialibus, foliosis. *Folia* ¼ unc. longa, imbricata, ovata, in petiolum

2. Draba *Falklandica*, Hook. fil.; cæspitosa, incano-pubescens, caule brevissimo foliis rosulatis obovato-spathulatis obtusis integerrimis, dense vestito, pedunculis plurimis robustis breviusculis pediculiisque patentim substellato-pilosis, siliculis corymbosis pedicellis ter longioribus elliptico-oblongis utrinque subobtusis in stylum non attenuatis, stylo brevi valido, valvis concavis stellatim pubescentibus, seminibus plurimis parvis, funiculis brevibus.

Hab. Falkland Islands; *Lieut. Robinson, R.N.*

Radix lignosa, descendens, ad apicem fasciculum rosulatum dense aggregatum foliorum subcoriaceorum gerens. *Folia* ½ uncialia, pubescenti-hirsuta, subtus pilis stellatis conspersa. *Pedunculi* 1½–2 unciales, validi, nudi v. imo basi unifoliati. *Siliculæ* 3–4 lin. longæ, stigmate brevi crasso terminatæ.

The most prominent characters of this species are the densely leafy short stem, or more properly cluster of abbreviated stems, which immediately surmounts the root; the short stout scapes, with comparatively large corymbs of pods; the latter are obtuse at both ends, but not abrupt, and the seeds are small, placed close to the margins of the valves and the opposite series separated by a very broad dissepiment.

3. Draba *funiculosa*, Hook. fil.; glaberrima, caule breviusculo ramoso, ramis foliosis, foliis lineari-lanceolatis interdum oppositis basique subconnatis margine argute ciliato-dentatis, scapis gracilibus ad apicem pauciforis, pedicellis fructiferis brevibus, siliculis linearibus utrinque obtusis, stigmate bilobo sessili, valvis planiusculis, seminibus plurimis oblongis, funiculis elongatis capillaceis. (Tab. LXXXIX.)

Radix sublignosa. *Caules* pluries divisi, ramis ½–¾ unc. longis. *Folia* erecto-patentia, rigida, ½–¾ uncialia, basi in petiolum subdilatata. *Scapi* 2–3 unc. longi, floriferi breves. *Flores* parvi, 3–5, breviter pedicellati, albidi, inconspicui. *Sepala* ovata, obtusa. *Petala* calyce bis longiora, spathulata, ad apicem rotundata. *Staminum* filamentis gracilibus. *Ovarium* oblongo-ovatum. *Silicula* foliis subæquilonga, linearis, valvis ter quaterve longioribus quam latis, medio obscure uninerviis.

A very peculiar species and resembling the *D. oligosperma*, Hook., of Arctic America, most in habit, and particularly *D. lactea*, Adams, a native of Siberia, in the form and ciliation of the leaves; it has no near ally on the South American continent.

Plate LXXXIX. *Fig.* 1, portion of a stem, with two leaves accidentally opposite and connate at the base; *fig.* 2, a flower; *fig.* 3, petal; *fig.* 4, flower, with sepals and petals removed; *fig.* 5, a pod; *fig.* 6, the same, with one valve removed; *fig.* 7, a seed and its funiculus; *fig.* 8, embryo:—all *magnified*.

4. PRINGLEA, *Anders., MSS.*

Petala nulla (Anders. MSS.). *Staminum* filamenta brevia, dilatata, edentula. *Ovarium* obovatum. *Stylus* subelongatus. *Stigma* capitatum. *Semina* plurima, biserialia, oblongo-cordata, in rostrum breve producta; testa crassa, subspongiosa, albida. *Silicula* oblonga, valvis convexis navicularibus, dissepimento nullo. *Cotyledones* accumbentes.—Genus *nulli arcte, affine* Eutremæ *forma seminum dissepimentoque retracto accedens, sed potius* Drabæ *indole siliculæ et structura embryonis relatum*. Herba *magnitudine varia, plerumque elata*. Rhizoma *elongatum, prostrata*. Folia *in capitulum magnum congesta*. Pedunculi *infra folia orti, erecti, foliosi*. Siliculæ *plurimæ majusculæ*. Pringlea *et* Diapharanthus, *Anderson in Herb. Banks.*

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vaginantem dilatata, superne patentia, obtusa, vix dentata, utrinque pube stellata tecta. *Racemi* unciales. *Flores* magnitudine et colore D. *aizoidis*. *Siliculæ* 4 lin. longæ.

Species tres sequentes verisimiliter non hactenus descriptæ, sed exemplaria mala offerunt, nempe e collectione Lindeni n. 431, in Caracas reperta, et n. 1341 Novæ Grenadæ (stirps mira) et e coll. Galeotti n. 4669 e Toluca in Mexico ellata.

Fitch, del. et lith.

Reeve, Brothers, imp.

Draba fimiculosa *Hook. fil.*

1. Pringlea *antiscorbutica*, Brown, *MSS. in Herb. Banks.* (Tab. XC.–XCI.)

Radix (seu *rhizoma*) prostrata, longe repens, 2–3 pedalis, crassa, diametro 1–2 unc., teres, transverse annulata, sublignosa, sapore *Cochleariæ Armoraciæ*, præcipue versus basin fibras crassas divisas ramosas emittens, ad apicem foliorum capitulum magnum scaposque 1–2 elongatos gerens. *Folia* imbricata, in capitulum, *Brassicæ oleraceæ* magnitudine formaque, referens disposita, 3–6 unc. longa, latissime obovato-spathulata, basi in petiolum latum attenuata, carnoso-coriacea, concava, margine integerrima, ciliata, interdum pubescentia, intus vasibus oleo subtilissimo repletis percursa. *Pedunculi* infra folia e rhizomate orti, ascendentes, 2–3-pedales, foliosi, sulcati, crassitie digitis humanæ, intus spongiosi, foliis plurimis imbricatis late obovatis sessilibus tecti. *Racemus* fructiferus elongatus, 6 unc. ad pedalem, e siliculis perplurimis dense congestis subclavatus. *Pedicelli* clavati, erecti. *Sepala* oblonga, obtusa, dorso pilosa. *Petala* nulla! (Anderson MSS.). *Stamina* parva, filamentis dilatatis. *Siliculæ* ¾–1 unc. longæ, oblongo-lanceolatæ, v. breviter oblongæ, erectæ, pubescentes v. patentim pilosæ, pilis simplicibus, rarius glabræ; valvis coriaceis, dorso convexis, obscure uninerviis; replo gracili, persistente; placentis biserialibus, e dissepimento retracto fungosis. *Semina* perplurima, majuscula, 1 lin. longa, subimbricata, e funiculo valido arcuato pendula, ovato-cordata, subcompressa, deorsum in rostrum breve obtusum producta; testa crassa, spongiosa, albida; cotyledonibus accumbentibus, radicula mediocri æquilonga.

This is perhaps the most interesting plant procured during the whole of the voyage performed in the Antarctic Seas, growing as it does upon an island the remotest of any from a continent, and yielding, besides this esculent, only seventeen other flowering plants.

I am unable to point out any very close affinity which this curious genus may have with others of the same natural family, and shall therefore confine myself to enumerating its peculiarities, and how far these may be common to others of the order to which it belongs.

The long stout rhizoma is very similar to the root of the *Cochlearia Armoracia* (Horse-radish), and not altogether different from that of the common kail or cabbage, which is however an annual plant, whilst the root-stocks of *Pringlea* and of the Horse-radish are perennial. In the form of the head of leaves, the resemblance to the common cabbage (*Brassica oleracea*) is most striking, and so is the use both are put to; but this analogy cannot be carried further; our garden esculent bears its flowers on a branching stem, that rises from amongst the leaves and is a continuation of the axis of growth of the plant, and it is chiefly owing to a check in the development of the parts connected with the inflorescence, or a complete suppression of those parts, that the annual leaves are increased in number and assume the densely capitate form; here, on the other hand, the annual flower-stalks spring invariably from the base of the cluster of perennial leaves and are wholly independant of them, as occurs in the horse-radish, in various Drabas, in *Arabis Mecloviana*, and in some other perennial *Cruciferæ* more frequently inhabitants of cold climates. But it is in the parts of the inflorescence that the most important botanical characters reside, and by them the position of this plant must be determined in the natural series. The flowers though carefully sought, escaped my observation, owing to the lateness of the season of our arrival. Broken sepals and small stamens, with short dilated filaments and oblong-lanceolate anthers, of a dark colour, were all I could detect; the stigma is peltate and quite entire.

The silicula accords in form with that of several *Alyssineæ*, to which group in De Candolle's arrangement *Pringlea* must be referred. There is no marked difference, except size, between the valves in this genus and *Cochlearia*; the septum, wholly absent here, is fenestrate in *C. fenestrata*, Br., a native of Arctic America, whilst the elavate peduncle, short style and broad peltate stigma, are very characteristic of other species of that genus. The presence or absence of a dissepiment, at all times spurious in the order, and of which there is a partial suppression in a genus usually provided with a complete one, cannot be considered a character of the greatest importance though very conspicuous; nor do we in any case find its absence in *Cruciferæ* with the more ordinary structure of seed-vessels to indicate any affinity between the plants thus characterized. In *Cochlearia* the septum is easily separable into the two plates of which it is composed, as observed by Brown, and close to the septum the origins of these plates are remote, so

that the point of an instrument may be placed between them, each arises immediately from the insertion of the funiculi, separating the parallel rows of seeds, a space occupied in *Pringlea* by a distinct groove or channel. The form of the seed and the thick spongy testa produced at the apex into a short rostrum, are far more characteristic of cruciferous plants with an incumbent than with an accumbent radicle; but that organ is here, as in *Cochlearia*, distinctly accumbent.

The contemplation of a vegetable very unlike any other in botanical affinity and in general appearance, so eminently fitted for the food of man, and yet inhabiting one of the most desolate and inhospitable spots on the surface of the globe, must equally fill the mind of the scientific enquirer and common observer with wonder. The very fact of Kerguelen's Land being possessed of such a singularly luxuriant botanical feature, confers on that small island an importance far beyond what its volcanic origin or its dimensions would seem to claim; whilst the certainty that so conspicuous a plant can never have been overlooked in any larger continent, but that it was created in all probability near where it now grows, leads the mind back to an epoch far anterior to the present, when the vegetation of the Island of Desolation may have presented a fertility of which this is perhaps the only remaining trace. Many tons of coal and vast stores of now silicified wood (which I have mentioned in the introduction to this Part) are locked up in or buried under those successive geological formations which have many times destroyed the forests of this island, and as often themselves supported a luxuriant vegetation. The fires that desolated Kerguelen's Land are long ago extinct, nor does the island show any signs of the recent exertion of those powers, that have at one time raised parts of it from the bed of the ocean with those submarine algæ which once carpetted its shores, but which now are some hundred feet above the present level of the sea. The *Pringlea*, in short, seems to have led an uninterrupted and tranquil life for many ages; but however loth we may be to concede to any one vegetable production an antiquity greater than another, or to this island a position to other lands wholly different from what it now presents, the most casual inspection of the ground where the plant now grows, will force one of the two following conclusions upon the mind; either that it was created after the extinction of the now buried and for ever lost vegetation, over whose remains it abounds, or that it spread over the island from another and neighbouring region where it was undisturbed during the devastation of this, but of whose existence no indication remains.

The illustrious Cook first discovered and drew attention to the "Kerguelen's Land Cabbage" during his first voyage, when accompanied by Mr. Anderson as surgeon and naturalist. The latter gentleman drew up an account of some of the more remarkable plants which he collected there and in other islands, which are preserved in the Banksian library; the present he designated as *Pringlea* in honour of Sir John Pringle, who wrote a work upon Scurvy. The latter circumstance has induced me, at Mr. Brown's suggestion, to assign the trivial name of *antiscorbutica*. The *Pringlea* is exceedingly abundant over all parts of the island, ascending the hills up to 1400 feet, but only attaining its usually large size close to the sea, where it is invariably the first plant to greet the voyager, like the *Cochlearia* or scurvy-grass upon many northern coasts. Its long rhizomata, often 3 or 4 feet long, lie along the ground; they are sometimes 2 inches in diameter, full of spongy and fibrous substance intermixed, of a half woody texture, and with the flavour of horse-radish, and bear at the extremity large heads of leaves, sometimes 18 inches across, so like those of the common cabbage that if growing in a garden with their namesakes in England they would not excite any particular attention; the outer leaves are coarse, loosely placed and spreading, the inner form a dense white heart, that tastes like mustard and cress, but is much coarser. The whole foliage abounds with essential oil of a pale yellow colour, highly pungent, and confined in vessels that run parallel with the veins of the leaf, and which are very conspicuous on making a transverse section of the head.

During the whole stay of the 'Erebus' and 'Terror' in Christmas Harbour, daily use was made of this vegetable, either cooked by itself or boiled with the ships' beef, pork, or pea-soup; the essential oil gives a peculiar flavour which the majority of the officers and the crew did not dislike, and which rendered the herb even more wholesome than the common cabbage, for it never caused heart-burn, or any of the unpleasant symptoms which that plant sometimes produces. Invaluable as it is in its native place, it is very doubtful whether this plant will ever prove equally so in other situations. It is of such slow growth that it probably could not be cultivated to advantage, and I fear that, unlike the cow cabbage of Jersey, it would form no new heads after the old ones were removed,

even if it would survive the decapitation. Growing spontaneously and in so great abundance where it does, it is likely to prove, for ages to come, an inestimable blessing to ships touching at this far-distant Isle; whilst its luxuriance amidst surrounding desolation, its singular form and appearance, striking even the casual observer, and the feelings of loneliness and utter isolation from the rest of the world, that must more or less oppress every voyager at first landing on its dreary and inhospitable locality, are circumstances likely to render the Kerguelen's Land cabbage, cabbage though it be, a cherished object in the recollection of the mariner: one never to be effaced by the brighter or luscious products of a tropical vegetation.

PLATE XC.—XCI. *Fig.* 1,—a young seed-vessel; *fig.* 2, a side view of a mature silicula; *fig.* 3, front view of the same; *fig.* 4, the same with the valvæ removed, shewing the seeds; *fig.* 5, a seed removed; *fig.* 6, the same cut open vertically; *fig.* 7, embryo, removed from the seed:—all *magnified*.

5. THLASPI, *Dill.*

1. THLASPI *Magellanicum*, Pers. *Ench.* vol. ii. p. 189. *Poir. Dict.* vol. vii. p. 541. *DC. Syst. Veg.* vol. ii. p. 381. *Prodr.* vol. i. p. 176.

HAB. Straits of Magalhaens, in dry and open places; "Baie Duclos" and "Baie Boucaut"; *Commerson.*

As far as I am aware, this exists in the Paris Museum only; from whence De Candolle drew up his description, according to which, it is sufficiently distinct from the only other South American species, *T. Andicola*, Hook. et Arn., a native of the Andes of Chili.

6. SENEBIERA, *Poir.*

1. SENEBIERA *australis* Hook. fil.; annua? parce patentim pilosa, caulibus diffusis ascendentibus ramosis, foliis subbipinnatifidis lobis incisis, siliculis longius pedicellatis majoribus didymis leviter reticulatis.

HAB. Chonos Archipelago; *C. Darwin, Esq.*

Omnia *S. pinnatifidæ*, sed racemis pedicellisque longioribus, siliculis duplo majoribus leviterque reticulatis.

I have examined specimens of *S. pinnatifida*, from various parts both of North and South America, where it grows from Buenos Ayres in lat. 35° south, to Carolina in lat. 35° north; and others from the old world, from the Cape of Good Hope in the same southern latitude, as far north as Gothland in Sweden, (lat. 58° N). From whatever locality I have received it, and however much the leaves may vary, the size of the siliculæ and their form and reticulation are constant, through twenty specimens gathered in as many different parts of Europe, Africa, and America; they do not approach the size of *S. australis*, though, except in size and the less reticulated surface of the pods of Chilian species, I can detect no difference of any importance.

The existence of another species so nearly allied to *S. pinnatifida*, from the Chonos Archipelago, where we cannot suppose it to have been introduced, is an argument in favour of M. De Candolle's conjecture, that *S. pinnatifida*, though now abundantly diffused throughout the warm and cultivated parts of Europe, Africa, and both Americas, is probably a native of the new world alone. It is impossible to say how far the *S. pinnatifida* may be naturalized, even in the new world; it seems remarkably plentiful at Buenos Ayres and along that coast to South Brazil and Rio; but I am not aware of its having been found on the western side of America, except at Valparaiso, and near Quito, whence Humboldt and Bonpland's specimens are described by M. Kunth as *S. pectinata*.

On the East of North America, according to Torrey and Gray, *S. australis* inhabits only the Southern United States, growing in fields and along the banks of rivers. M'Fadyen mentions it in his Flora of Jamaica, as an abundant native of that Island, in common with many other cruciferous plants, whose recent introduction is far less equivocal.

The parts of the old world inhabited by the *S. pinnatifida*, are strictly the Eastern, as is to be expected in an

immigrant from the westward. The south of Scotland and England, South Sweden, the western Pyrenées, and Atlantic shores of Spain are its principal European habitats, but it is not found in the vast Russian dominions, in any portions of Asia, or of Sicily, the Eastern Archipelago, or other mediterranean regions. It inhabits all the Atlantic Isles, the Azores and Canaries, and I have gathered it in Madeira, Ascension and St. Helena. In the Tropics and south temperate zone it extends no further east than the Cape and Mauritius, but re-appears in New Holland, according to De Candolle, though it is not mentioned by Brown, nor have I seen it in that country. From the above enumeration it would seem that this plant has, to a certain extent, been distributed by the agency of ships, but we are at a loss to conceive, why a species so readily transplanted to inhabited spots, as the Atlantic Islands, should have not been also introduced upon the much frequented coasts of Asia; the disinclination it manifests to proceed by land further east than the shores of those countries which it has so readily gained, is another fact connected with the geographical distribution of the present and some other introduced plants, of which I am unable to offer an explanation.

The last peculiarity of *S. pinnatifida* to which I would allude, is the comparatively high northern latitude it attains in Europe to what it does in America, where its limit is 32° lower in latitude. This probably arises from the species being impatient of great cold, at any part of the year, the severity of the American winters being, even in North Carolina, very considerable. The same agent, cold, may check in some degree the easterly progress of the plant in the northern States of Europe, but certainly not in the southern or mediterranean regions.

7. SISYMBRIUM, *Linn.*

1. Sisymbrium *Sophia*, Linn.; *Sp. Pl.* 922. *DC. Syst. Veg.* vol. i. p. 198. *Smith, Engl. Bot. t.* 968.

Var. *canescens*; siliquis latioribus plerumque brevioribus. S. canescens, *auctorum*.

Hab. Strait of Magalhaens, Cape Negro; *C. Darwin, Esq.*

These specimens agree in every particular with others gathered on the walls of the city of Norwich, except in the siliqua of the latter being rather longer and narrower.

There are two widely distributed, and, especially in the foliage and pubescence, highly variable species of the genus; both of which seem so remarkably to follow civilized man, that it becomes extremely difficult to assign the native place to either. The true *S. Sophia* is generally considered a European plant only; but it appears to be truly a native of Canada, according to Torrey and Gray, it also occurs in Mexico, if Galeotti's (no. 4682) be, as I suspect, a mere variety, and I am unable to distinguish some of Dr. Gillies' Chilian specimens from the European. The variety, described above, is a very common American state of *S. Sophia*, having the siliquæ shorter and broader than the European state, to it I refer Mr. Darwin's plant, and that of Dr. Gillies. It also inhabits Valparaiso, Buenos Ayres, and California, from whence however, I have seen but one specimen, with immature fruit. *S. canescens*, Nutt., has still shorter pods, generally about half as long as the pedicels, and borne upon very long racemes. It is a native of the Andes of Mendoza, of Mexico, California and the United States, and of Cape Farewell on the coast of Patagonia. Though very distinct at first sight, it is not so in reality. The pods are variable in length, particularly the pedicels, for, in both Mexican and Snake-country (California) specimens, they are considerably shorter than the siliquæ. The *S. Sophioides*, Fischer, which runs along the Arctic sea-shores of Asia and America, must I fear sink into a variety of *S. Sophia*, or probably a state of that species, altered by the rigorous climate. The pods are certainly longer, but that is a variable character. The *Cardamine Menziesii* of De Candolle is identical with this. The *Sisymbrium willefolium*, Ait., of Teneriffe is closely allied to the above, but is very distinct in its large flowers and remarkably woody habit: the leaves are divided into very minute segments, a character to which I do not attach any importance; Mr. Webb has described it in his admirable "Phytographia Canariensis" under the generic name of *Descurainea*, which includes also the present species and some other *Sisymbria*.

2. SISYMBRIUM *Magellanicum*, Hook. fil.; glaberrimum, erectum, superne ramosum, foliis ovato-oblongis acutis pinnatifido-lobatis basi pinnatifidis in petiolum attenuatis, lobis sinuato-dentatis acutis, racemis florentibus corymbosis fructiferis elongatis, pedicellis ebracteatis patentibus, siliquis suberectis teretibus linearioblongis in stylum brevem attenuatis brevioribus, valvis pilosis, septo uninervi. Brassica Magellanica, *Juss. ined. Pers. Ench.* vol. ii. p. 207. *DC. Syst. Veg.* vol. ii. p. 595. *Prodr.* vol. i. p. 215. *Deless. Ic. Select.* vol. ii. t. 85.

HAB. Strait of Magalhaens; *Commerson*. Port Famine; *Capt. King*. Cape Negro; *C. Darwin, Esq.*

Caulis in exemplaribus nostris bipedalis, teres, glaucescens. *Folia* (caulina solum mihi nota) 2½ unc. longa, 1½ lata, superiora irregulariter dentato-lobata, inferiora subpinnatifida, lobis divaricatis. *Racemus* fructiferus 6-uncialis; pedicellis ½ unc. longis. *Sepala* oblonga, obtusa, dorso parce pilosa, pilis patentibus stellatis. *Petala* pedicellis longiora, spathulata, flava. *Staminum* filamenta filiformia. *Siliquæ* vix ½ unc. longæ, suberectæ v. patentes, utrinque attenuatæ, stylo brevi valido terminatæ. *Stigmata* subcapitata. *Valvæ* 1½ unc. latæ, juniores dorso inferne præcipue ut sepala pilis patentibus stellatis barbatæ, medio nervo prominulo vix carinatæ. *Septum* uninerve, e membranis duabus ad septum solutis constans, nervo valido, arcolis oblongis hexagonis. *Semina* oblonga, rufa, sulcata, sulcis punctatis, funiculis brevioribus, radicula obliqua incumbente.

I have no hesitation in referring this plant to Persoon's *Brassica Magellanica*, Delessert's excellent figure being very characteristic, in all respects, save that the stellated hairs on the pods are not represented. It is apparently a little known species, Mr. Darwin's and Capt. King's specimens being all I have seen. De Candolle describes the pods as glabrous and torulose, but he evidently has only seen them when young.

V. BIXINEÆ, *Kunth*.

1. AZARA, *Ruiz et Pavon*.

1. AZARA *lanceolata*, Hook. fil.; ramulis pubescentibus, foliis grosse inæqualiter subduplicato-serratis majoribus lanceolatis acuminatis, minoribus rotundatis ovatisque, corymbis 3—5 floris interdum subpaniculatis, pedunculis folio minore æquilongis, pedicellis gracilibus, floribus polygamis, sepalis ovatis reflexis, staminibus perplurimis sterilibus paucis, placentis 4.

HAB. South Chili, Cape Tres Montes; *C. Darwin, Esq.*

Frutex seu *Arbuscula* 12 ad 18 ped. alta. *Rami ramulique* graciles, pube fusca obtecti. *Folia* subcoriacea, utrinque gradatim et inferne in petiolum brevem attenuata, glaberrima, 2—3-uncialia, minora ½ unc. longa. *Flores* majusculi interdum in paniculam 1–1½ unc. longam dispositi, seu corymbosi, corymbis solitariis paniculatisve, pedunculis pedicellisque gracilibus, puberulis, bracteis ad basin pedicellorum parvis. *Staminum* filamenta ½ unc. longa, calyce ter longiora. *Stylus* primo visu simplex, sed in ramos 4 breves separabilis. *Ovula* perplurima, placentis parietalibus 4 longitudinalibus funiculis brevibus adnexa. *Semina* plurima, inmatura, compressa.

The most southern species of the genus, and also found at Valdivia by Mr. Bridges (n. 560); it is closely allied to another undescribed plant, *A. Chiloense*,* mihi, differing in the much larger flowers and leaves, more slender peduncles and longer pedicels. The æstivation of the calyx in this genus is valvate, the segments 5 and of nearly equal size; the stamens generally indefinite, with some of the outer ones abortive, but in *A. Celastrina*, where they are few, and none are abortive, the outer series is replaced by five small thickened glands. In *A. micro-*

* A. *Chiloense*, n. sp.; ramulis velutino-pubescentibus, foliis ut in *A. lanceolata* sed dimidio minoribus, pedicellis flore æquilongis, staminibus sterilibus plurimis apice clavatis.

HAB. Chiloe; *Capt. King*.

*phylla**, mihi, (vid. infra) the stamens are definite and invariably four or five in number, alternating with as many conspicuous obcordate fleshy flattened glands, placed rather externally to them and alternating also with the segments of the calyx, to which the stamens are opposite. The filaments are flattened, and the anthers decidedly extrorse, an arrangement probably common to the other species, where, owing to the filiform and slender filaments, it escapes notice. The ovary has three lines of parietal placentæ: there are four in some other species, *A. lanceolata*, *A. Chilœnse*, and *A. serrata*, whose ovaries I have examined.

VI. VIOLARIEÆ. *DC.*

1. VIOLA, *Tourn.*

1. Viola *maculata*, Cav. *Icon.* vol. vi. p. 20. t. 539. *DC. Prodr.* vol. i. p. 297. *D'Urville in Mém. Soc. Linn. Paris.* vol. 4. p. 617. *Freyc. Voy. Bot.* p. 187. *Hook. Ic. Plant.* t. 499. *Hook. et Arn. in Bot. Miscell.* vol. iii. p. 144. et *Bot. Beechey Voy.* p. 10. V. pyrolæfolia, *Poiret Dict.* vol. viii. p. 636. *Gaud. in Ann. Sc. Nat.* vol. v. p. 102. (*excl. syn.* V. Magellanicæ, *Forst.*)

Hab. Strait of Magalhaens; *Commerson.* Falkland Islands; *Née, Bougainville* and all succeeding voyagers.

Petala lateralia glanduloso-barbata, supremo plerumque glaberrimo. *Antherarum* margines ciliati.

A native both of the east and west sides of South America, in the former inhabiting the coast at Cape Farewell and the Falkland Islands, and on the west side re-appearing at Chiloe and Valdivia, and passing thence north to Conception; a singular distribution, for I have seen no specimens from the Strait itself, which is Commerson's habitat, according to De Candolle. The two varieties, constituted by Poiret, are hardly of sufficient importance to be retained, though De Candolle has done so, under the names of *a*, *megaphylla* and *β*, *microphylla*.

2. Viola *Magellanica*, Forst.; subacaulis, foliis omnibus radicalibus longe petiolatis reniformi-rotundatis crenatis supra pilosiusculis, stipulis lanceolatis integris v. apice laceris, scapo solitario unifloro foliis bis longiore, bracteis lanceolatis, sepalis oblongo-lanceolatis obtusis, petalis obovatis lateralibus barbatis, inferiore in sacculum brevem obtusum producto, stylo arcuato, stigmate nudo. V. Magellanica, *Forst. in Comm. Gœtt.* vol. ix. p. 41. t. 8. *DC. Prodr.* vol. i. p. 297.

Hab. Staten Land; *Forster, Dr. Eights.* South part of Tierra del Fuego; *C. Darwin, Esq.*

Rhizoma plus minusve elongatum, ad apicem folia pauca scapumque solitarium gerens. *Petioli* graciles, 2–5 unc. longi, glaberrimi. *Folia* magnitudine varia, ¾–1½ unc. longa, supra pilis paucis præcipue versus margines instructa, infra glaberrima. *Scapus* gracilis, petiolis bis longior, superne puberulus, ad ⅔ longitudinis bibracteatus, bracteis parvis. *Flos* magnitudine *V. odoratæ*, verosimiliter flavus, sicitate punctatus.

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* A. *microphylla*, n. sp.; glaberrima, ramis ramulisque distichis divaricatis, foliis distichis parvis coriaceis integerrimis, majoribus obovatis obtusis in petiolum brevem attenuatis, minoribus oblongis rotundatisve, corymbis sessilibus v. breviter pedunculatis, floribus parvis, staminibus 4—5 glandulis alternantibus, filamentis planiusculis, antheris extrorsis.

Hab. Chiloe; *Capt. King.* Province of Valdivia, at the base of the Andes; *Bridges* (n. 560).

Frutex 10—15-pedalis. *Rami* pedales, stricti. *Folia* ½ unc. longa, nitentia, interdum apiculata. *Corymbi* folium minus subæquantes, 5—7 flori, floribus parvis.

3. Viola *Commersonii*, DC; humilis, foliis omnibus radicalibus petiolatis ovato-rotundatis obtusis crenatis supra parce pilosis, stipulis late ovatis membranaceis concavis integerrimis, scapo foliis bis longiore superne arcuato, bracteis floribus approximatis majusculis erectis lanceolatis acutis basi utrinque in auriculas dilatatis, flore pendulo, petalis obovato-spathulatis glaberrimis. V. Commersonii, *DC. Prodr.* vol. i. p. 297.

Hab. Strait of Magalhaens; Port Gallant, at the top of the mountains; *Commerson.* South part of Tierra del Fuego; *C. Darwin, Esq.*

Precedenti habitu simillima; sed statura, foliis basi non cordatis, petalis glaberrimis et præcipue bractearum forma distinctissima. *Petioli* ½ pollicares, laminæ subæquilongi. *Scapus* petiolis bis longior, apicem versus arcuatus et ibi bibracteatus; bracteæ erectæ, lineari-lanceolatæ, acutæ, 2½ lin. longæ. *Sepala* lineari-oblonga, acuminata, petalis ½ breviora. *Petala* flava, 4 lin. longa. *Stylus stigmaque* ut in priore.

A very distinct and probably rare species, allied to the last, but essentially different. The leaves are generally reticulated on the under surface.

4. Viola *tridentata*, Menz.; depressa, glaberrima, caule procumbente ramoso, foliis confertis coriaceis obovato-cuneatis apice tridentatis trifidisve plerumque basi utrinque unidentatis, petiolo brevi in stipulas vaginantes dilatato, scapo brevi valido arcuato basin versus bracteolato, bracteis oblongis obtusis, sepalis oblongo-lanceolatis basi deorsum productis, petalis oblongis obtusis glaberrimis, calcare nullo, stylo gracili apice oblique truncato, capsula globosa. V. tridentata, *Menz. MSS. in DC. Prodr.* vol. i. p. 300.

Hab. Staten Land, at the tops of the mountains; *Menzies.* Port Famine; *Capt. King.* Hermite Island, on the hills; *J. D. H.* Falkland Isles, on the mountains, 1200–1500 ft.; *J. D. H.*

Species pusilla, prima visu *Caltham appendiculatam* referens. *Caules* graciles, 1–2 unc. longi, vage ramosi, prostrati, superne foliosi. *Folia* valde coriacea, ½ unc. longa, subdisticha, erecto-patentia, glaberrima, subnitida, venis inconspicuis. *Scapus* solitarius, erectus, apice arcuatus, folio ½ longior, basi bracteatus, bracteis pro planta majusculis. *Flores* antautes, parvi, cærulei. *Sepala* coriacea, sub 1½ lin. longa. *Petala* sepalis bis longiora, lineari-oblonga. *Antheræ* orbiculatæ, in laminam membranaceam productæ, filamentis brevissimis. *Stylus* gracilis, arcuatus, apice oblique truncatus, cavus, nec bilobus. *Capsula* magna, pendula, globosa, valvis coriaceis.

A very singular little species, agreeing in the shape of the style and stigma with the *V. Magellanica* and *V. Commersonii*, but of a totally different habit and foliage, which approach more nearly to some of the species of the *Asterias* group. It is probably a common mountain plant throughout Fuegia; but, from its small size and prostrate mode of growth, readily overlooked.

VII. DROSERACEÆ, *DC.*

1. DROSERA, *L.*

1. Drosera *uniflora*, Willd.; perpusilla, acaulis, foliis omnibus radicalibus stellatim patentibus spathulatis lamina rotundata longe glanduloso-ciliata, scapo brevi valido unifloro. D. uniflora, *Willd. Enum. Hort. Berol.* p. 340. *DC. Prodr.* vol. i. p. 317. *Gaud. in Ann. Sc. Nat.* vol. v. p. 105. *et in Freyc. Voy.* p. 187. *D'Urville, in Mém. Soc. Linn. Paris*, vol. iv. p. 617.

Hab. Strait of Magalhaens; Port Famine; *Capt. King.* South part of Tierra del Fuego; *C. Darwin, Esq.* Falkland Islands; *Gaudichaud, D'Urville, J. D. H.*

Radix fibrosa, fibris crassiusculis descendentibus. *Caulis* brevissimus. *Folia* ½ unc. longa. *Scapus* validus, erectus, foliis vix longior. *Flos* pro planta conspicuus, sepalis inæqualibus breviter obovato-spathulatis, petalis elongato-obovatis bis longioribus, filamentis breviusculis, stylis ad basin in ramos plurimos divisis.

A very small and distinct species, most nearly allied to that mentioned in the first part of the volume, and of which I have, since the publication of the portion alluded to, seen perfect specimens collected by M. Le Guillon, one of the officers of Admiral D'Urville's Expedition. It appears to me that these, with the *D. Arcturi*, Hook. (Ic. Plant. t. 56) are three single-flowered representative species belonging to the extreme southern portions of New Zealand, Australia and America.

VIII. CARYOPHYLLEÆ, *Juss.*

1. LYCHNIS, *DC.*

1. Lychnis *Magellanica*, Lam.; pubescenti-tomentosa, caule stricto erecto plerumque unifloro, foliis linearibus graminis glabriusculis, flore erecto, calyce late ovoideo segmentis oblongis apicibus rotundatis membranaceis, petalis angustis calyce ½ longioribus. L. Magellanica, *Lam. Dict.* vol. iii. p. 641, *DC. Prodr.* vol. i. p. 386.

Hab. Strait of Magalhaens; *Commerson*. Port Famine; *Capt. King*. Cape Negro; *C. Darwin, Esq.*

Caules basi ramosi, cæspitosi, e radice fusiformi elongata orti. *Folia* radicalia 1–1½ unc. longa, conferta, basi ciliata, vaginantia, superne glaberrima, gradatim acuminata, coriacea, marginibus tenuiter cartilagineis integerrimis; caulina breviora, pube albida tomentosa. *Rami* florentes v. scapi plerumque unifiori, 6 unc. ad pedalem, graciles, teretes, 3–5 nodosi, molliter pubescentes. *Flos* magnus, erectus v. paulo inclinatus. *Calyx* ½ unc. longus, ½ latus, subinflatus, pubescens, membranaceus, 10-nervosus, nervis viridibus; dentibus 5, majusculis, oblongis, ad apicem rotundatis. *Petala* calyce sub ½ longiora, ungue lineari, fauce squama lata sublacera erecta instructa, lamina fere ad basin partita; laciniis divaricatis, late linearibus, retusis, basi extus dente majusculo auctis. *Germen* oblongum, anthophoro inconspicuo insidens; stigmatibus 5. *Capsula* exserta, unilocularis, ad apicem 5-valvis. *Semina?*

The resemblance of this to the variable *L. apetala*, of Arctic Europe, Asia and America, is so very strong, that I hardly feel justified in retaining it as a distinct species. The only differential character of importance that I can point out, is the form of the petals, the lamina of which is here divided to the base into two linear segments. There may be peculiarities also in the seeds, of which I am ignorant, for Ledebour (Flora Rossica, vol. i. p. 326) attaches great importance to these organs, as distinctive of all the varieties of *L. apetala*. The present species has been brought by Dr. Gillies from the Andes of Chili, his specimens belong to a broad-leaved variety. All the species most closely allied to the present are natives of very cold regions, or of great elevations in warmer climates. In Europe and North Asia the *L. apetala* never, at the level of the sea, inhabits a lower latitude than the Arctic circle, approaching the Pole itself in Nova Zembla and Spitzbergen. In North America it abounds likewise chiefly to the north of the polar circle, forming part of the scanty Flora of Melville Island; at a great elevation on the Rocky Mountains it occurs as low as 52° N. latitude. It is not a native of the Alps, nor there replaced by any other species, the lands bordering the Icy sea being its only European habitat. In Asia, as in North America, it descends to latitude 50° on the Altai range, and the Himalayah produces several representative species. The re-appearance of a plant, so truly arctic, on the highest mountains of Chili, and again at the Strait of Magalhaens, if the present be the same, is a very curious fact, to be classed with those alluded to under the *Draba incana*, vid. p. 238. On the Andes of Colombia the species is replaced by an allied but very distinct one, *L. thyrsoides**.

* *L. thyrsoides*; caule procumbente ascendente pubescente simplici v. superne paniculatim diviso, foliis radicalibus lanceolatis acuminatis marginibus ciliato-tomentosis, caulinis pedicellis calycibusque glanduloso-pubescentibus, floribus solitariis v. plurimis nutantibus, calyce latissime ovoideo ad medium quinquefido petalis ½ breviore. Silene thyrsoides, *Fenzl. in Endl. Nov. Stirp. Dec.* 39. *Walpers' Repert.*, vol. i. p. 279.

Hab. Chimborazo; *Jameson*, n. 39.

Statura et habitu *L. apetalæ* affinis, sed forma et longitudine segmentorum calycis valde diversa.

Sagina subulata, D'Urv.

W. Fitch, del. et lith.

Printed by Reeve Brothers.

2. SAGINA, *Linn.*

1. Sagina *procumbens*, Linn. *Sp. Pl.* p. 185. *DC. Prodr.* vol. i. p. 389. *Smith, Engl. Bot.* t. 880. *Gaudichaud in Ann. Sc. Nat.* vol. v. p. 105. *et Voy. Freyc. Bot.* p. 137. *D'Urville in Mem. Soc. Linn. Paris*, vol. iv. p. 617. *Hook et Arn. in Bot. Misc.* vol. iii. p. 147.

Hab. Falkland Islands, abundant near the sea; *Gaudichaud, D'Urville*, and all subsequent collectors.

These specimens are undistinguishable from others of European growth, by any characters I can discover. I am not aware that this plant inhabits any other part of the southern hemisphere except the higher latitudes of South America. Dr. Gillies gathered it on the roofs of houses in Buenos Ayres, where it may possibly have been introduced, though in the Falkland Islands, I should have at first sight pronounced it, from its great abundance, certainly wild; these are its only South American habitats. I sought for it carefully, but in vain, in Fuegia. In North America it is much more widely diffused, from Providence to New Orleans on the east coast, but I have seen no west coast specimens; those of Douglas (and hence possibly Scouler's quoted in Torrey and Gray's Flora, as coming from the Oregon), belonging to *Spergula saginoides*; in no other part of North America has the plant been found, save in the most highly cultivated districts, and not at all in the British possessions, and since it is one that increases and follows cultivation rapidly, I feel inclined to exclude it from the North American flora, especially as Torrey and Gray mark the other British species, *S. decumbens*, Ell. (*Sperg. saginoides*, L.), *S. apetala*, L., and *S. erecta*, L., as having all been probably introduced. Its European range is widely different from the American, northward, it is found in Iceland and Lapland, North Russia and Siberia, in the latter countries, however, avoiding the extreme rigour of the Siberian plains and confined to the mountains of the Altai and Baikal. Spain again seems its southern limit in the west of Europe, European Turkey in the middle, and the Caucasus on the east. *Spergula saginoides*, though so very nearly allied in other respects, has a considerably different geographical range, and hence should, in questions of distribution, be carefully separated from this. In England it is rather a rare and mountain plant; we have well authenticated specimens from Greenland, Iceland, and Lapland, it also inhabits North Russia, and Siberia, (but not beyond the 50th. degree,) Unalashka and the west coast of North America to the southward of the Arctic circle; thus, like the *S. procumbens*, this is also a plant of the old world, both Greenland and North-west America having more of the peculiarities of European and Asiatic botany respectively, than of American. Not only do Torrey and Gray remark that it is probably introduced in the United States, but their specimens even appear to belong to a different species. In the south of Europe it is also an Alpine plant, having been found on the Pyrenées on the east, and on the Caucasus to the west, Aucher Eloy's, n. 654, from Persia is probably the same, but his specimens are very imperfect.

3. COLOBANTHUS, *Fenzl.*

1. Colobanthus *subulatus*, Hook fil.; *Fl. Antarct.* part i. p. 13. (Tab. XCIII. *sub nomine* Saginæ.)

Var. *β*, *Darwinii*, apicibus foliorum segmentorumque perianthii muticis.

Hab. Good Success Bay; *Banks and Solander*. Hermite Island, Cape Horn, clefts of rocks, 12–1400 feet; *J. D. H.* Falkland Islands, near the sea and at the tops of the hills, 700–1000 feet; *D'Urville, J. D. H.* Var. *β*, south part of Tierra del Fuego; *C. Darwin, Esq.*

In the first part of this volume I alluded to the singular fact, that all the Campbell Island specimens of *C. subulata* have 5 segments to the perianth, 5 stamens, 5 styles, and 5 valves to the capsule, while all those from Fuegia and the Falklands have only 4, and this constantly and unaccompanied with any other appreciable differences. It may fairly be questioned whether the pentandrous state is not equally entitled to specific rank, as *Spergula saginoides* is to be separated from *Sagina procumbens*.

From the 4 stamens, of this state of *C. subulatus* and of all the other species, alternating with the segments of

the perianth, we may presume that they belong to that series of those organs, which are opposite the petals in decandrous *Alsineæ* and generally suppressed in the pentandrous, and that the other series is represented by two thickened glands, placed between the bases of the stamens, rather externally to them, and opposite the two inner segments of the perianth; they are very conspicuous in *S. muscoides*, (part i. p. 14) and more or less evident in most species. One of my specimens was provided with 5 stamens, the fifth being opposite one of the larger sepals. During my examination of the Campbell Island variety, I was led into an error. In it the seeds germinate before leaving the capsule, and sending their radicles through the receptacle into the peduncle, and their cotyledonary leaves upwards between the valves of the seed-vessel, I described the axis of the capsule or the receptacle of the seeds as proliferous.

This genus, which I formerly arranged (following Fenzl.) with the *Portulaceæ*, I have now included in *Alsineæ* proper, from its near affinity with *Sagina* and *Spergula*; the limits between these two orders are so confessedly undefineable, that I need scarcely do more than indicate the most remarkable points of similarity between this genus and the majority of the *Portulaceæ*; which are, the distinctly perigynous stamina and their being alternate with the segments of the perianth. The perigynous insertion of the stamina can hardly be considered foreign to the *Alsineæ*, for it is seen in *Larbræa*, a genus in all other respects nearly allied to *Stellaria*, also in *Cherleria* and some species of *Arenaria* itself, plants which by some have been removed to *Portulaceæ*, on no other ground than because the staminiferous disc, (so conspicuous in another form, as the authophorus of *Silenеæ*), and which probably exists throughout the order, is more dilated in these plants. The close affinity of *Colobanthus* with *Sagina* may be perceived in the prevailing tetramerous arrangement, and in two of the segments of the perianth being always external and larger than the others, in the suppression of the petals, and in the perigynous insertion of the stamina, which equal the sepals in number; the chief difference between them lies in the stamens of the former being alternate with the calycine pieces, and those of the latter opposite to them. *Colobanthus* shews a further peculiarity in the valves of the capsule being opposite to the stamens and alternate with the sepals, whilst in *Sagina* and most other tetrandrous or pentandrous *Alsineæ*, they are opposite both to the stamens and sepals. Here then the anomaly rests, either in the position of the valves of the capsule of *Colobanthus*, the stamens being still considered as belonging to the series opposite the petals, or in the situation of the segments of the perianth, which if opposite the stamens, would present an arrangement of parts exactly like *Sagina*, where stamens, sepals and valves are all opposite one to another.

PLATE XCIII. *Fig.* 1, portion of stem and pair of leaves; *fig.* 2, flower; *fig.* 3, the same laid open; *fig.* 4, a flower of the Campbell Island variety; *fig.* 5, ovarium of Falkland Island variety, cut open; *fig.* 6, capsule, and *fig.* 7, seed from the same; *fig.* 8, the same cut open, shewing the embryo:—all *magnified*.

COLOBANTHUS *crassifolius*, Hook. fil.; glaberrimus, cæspitosus, crassiusculus, caulibus plurimis erectis ramosis, foliis linearibus obtusis mucronatisve basi vaginantibus, pedunculis folio brevioribus post anthesin elongatis, floribus 4–5-meris, perianthii segmentis ovatis v. ovato-lanceolatis obtusis capsulam apice 5-valvem subæquantibus v. longioribus. Sagina crassifolia, *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 617. *Gaud. in Freyc. Voy.* p. 137. Colobanthus Quitensis, *et* C. saginoides, *Bartling, et Presl, Reliq. Hænk.* vol. ii. p. 13. t. 49. f. 2.

HAB. Strait of Magalhaens, Port Famine; *Capt. King*. Hermite Island, Cape Horn; *J. D. H.* Falkland Islands; *D'Urville, J. D. H.*

The figure of this plant in the "Reliquiæ Hænkianæ" is sufficient for the determination of the species, though I do not coincide with Bartling in considering it the *Sagina Quitensis* of Humboldt and Kunth, which is described as having filiform stems and four small bracteæ on the peduncles. I have little doubt that the latter plant is a *Colobanthus*, for the stamens are described to be alternate with the segments of the calyx, but probably a very different species. Specimens of *C. crassifolius* gathered on the Andes of Chili, have the capsule so much longer than the perianth, as

Fitch. del.

Colobanthus kerguelensis Hook fil.

Printed by Reeve Brothers.

to entitle them to the rank of a separate variety; in the more southern examples that organ is seldom much exserted. The segments of the calyx vary both in length and breadth, as the whole plant does in size. Judging from Bartling's description of *C. saginoides*, it is a state of this.

A very similar plant to the above is Galeotti's (n. 4404), from the Peak of Orizaba in Mexico, 12,900 feet; it differs only in having the segments of the perianth lanceolate and acuminate.

3. Colobanthus *Kerguelensis*, Hook. fil.; glaberrimus, pulvinatim cæspitosus, caulibus ramosis foliosis, foliis imbricatis ovatis v. ovato-lanceolatis acutis integerrimis coriaceis, pedunculis plurimis lateralibus e basi ramorum ortis interdum bibracteolatis, floribus majusculis foliis vix superantibus tetrameris, capsula profunde 4-valvi. (Tab. XCII.)

Hab. Kerguelen's Land; abundant, chiefly near the sea.

Radix gracilis, descendens, subfusiformis, apice ramos perplurimos emittens. *Rami* validi, dense compacti, 1–2 unc. longi, pluries divisi, basi vaginis scariosis foliorum obtecti. *Folia* plerumque versus apices ramorum imbricata, ¼–½ unc. longa, suberecta, lætæ viridia, uninervia, siccitate flavescentia, margine incrassato. *Pedunculi* ½–¾ unc. longi, ex axillis foliorum solitarii, erecti, ramo æquilongi, superne incrassati, infra medium bibractesti, bracteis lineari-subulatis. *Perianthium* ¼ unc. longum; segmentis ovatis, acutis, concavis, biserialibus; exterioribus majoribus, sub 7-nerviis; interioribus angustioribus. *Stamina* 4, disco carnoso inserta, valvis capsulæ opposita; filamentis compressis, lineari-subulatis; antheris parvis. *Ovarium* in discum carnosum sessile, globoso-ovoideum, obtuse angulatum, uniloculare, multiovulatum; stylis 4, subulatis, divaricatis, intus stigmatiferis; ovulis circa axin centralem placentiferam dispositis. *Capsula* globosa, perianthio æquilonga, ad medium v. ad basin in valvas 4 obtusas perianthii laciniis alternas fissa; seminibus plurimis, axi centrali demum libero adnexis; testa granulata, rufo-fusca.

In this species, by far the finest of the genus, the relative position of the parts of the flower is very evident. The perianth is formed of four pieces, two of them outer, larger, and distinctly embracing the inner; alternating with these are the four stamens, analogous to the inner and shorter series, or those opposite the petals in *Spergula* and *Sedum*, and which are opposite the carpellary leaves in both those genera. Supposing then that the five petals and ten stamens of *Spergula* form three alternating whorls of five organs each, in this plant the two outer of these whorls are suppressed; in *Sagina procumbens* the inner alone, and in *S. apetala* the outer and inner.

Plate XCII. *fig.* 1, peduncle, bractese, and flower; *fig.* 2, a flower, laid open; *fig.* 3, ovarium; *fig.* 4, receptacle and ovules, taken from the same; *fig.* 6, a seed; *fig.* 7, the same, cut open, showing the embryo:—all *magnified*.

4. Colobanthus *diffusus*, Hook. fil.; procumbens, diffusus, ramosus, ramis gracilibus, foliis radicalibus paucis confertis, caulinis oppositis omnibus carnosiusculis lineari-subulatis acutis integerrimis, pedunculis plurimis filiformibus strictis plerisque axillaribus foliis bis longioribus ebracteatis post anthesin elongatis, floribus parvis tetrameris, perianthii segmentis ovato-rotundatis marginibus subscariosis, capsula perianthio bis longiore ad medium 4-valvi.

Hab. Amsterdam Island; *Sir G. Staunton, Lieut. A. J. Smith.*

Radix fibrosa. *Caules* tenues, graciles, 3 unc. longi, diametro *Saginæ procumbentis*. *Folia* viridia, 4 lin. longa, siccitate subflexuosa, obscure uninervia. *Flores* parvi, 1–1½ unc. longi. *Capsula* valvis obtusis coriacco-membranaceis, segmentis perianthii oppositis.

This is quite a distinct species, its habit more like *Sagina procumbens* than any of the others. I have appended a description* of another new plant belonging to this genus, but of a very different mode of growth.

* C. *cherlerioides*, n. sp.; dense pulvinatim cæspitosus, ramosus, ramis fastigiatis foliosis, foliis parvis arcte

4. STELLARIA, *Linn.*

1. Stellaria *debilis*, D'Urv.; glaberrima, caulibus prostratis laxe cæspitosis gracilibus vage divaricatim ramosis, foliis flaccidis lineari-lanceolatis subacutis trinerviis marginibus tenuissime cartilagineis integerrimis, pedunculis axillaribus solitariis unifloris foliis brevioribus, petalis bipartitis calyce brevioribus, capsula exserta. S. debilis, *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 618.

Hab. Staten Land; *Mr. Eights*. Falkland Islands; by the margins of rivulets near the sea, not uncommon; *D'Urville, J. D. H.*

Planta gracilis, *Callitrichem autumnalem* referens. *Caules* 3–5 unc. longi, ramosi, ramis fere filiformibus. *Folia* patentia, læte sed pallide viridia, $\frac{1}{4}$–$\frac{1}{2}$ unc. longa, $1\frac{1}{2}$–2 lin. lata, nervis duobus marginalibus instructa. *Pedunculi* validi, florem solitarium pro planta majusculum gerentes.

A very delicate plant and common in the Falkland Islands, though *from its* inconspicuous nature often overlooked. It generally grows among grass by the margins of streams, forming pale green tufts, and is more allied to the solitary-flowered Tasmanian species with axillary peduncles than to any European congener. Fuegian specimens are larger in all their parts than those from the Falkland Islands.

2. Stellaria *lanceolata*, Poir. *Dict.* vol. vii. p. 416. *DC. Prodr.* vol. i. p. 396.

Hab. Strait of Magalhaens; *Commerson*.

3. Stellaria *rotundifolia*, Poir. l. c. *DC. Prodr.* l. c. p. 397.

Hab. Strait of Magalhaens; *Commerson*.

I know no more of these two species than is conveyed in Poiret's descriptions; Kunth, according to De Candolle, considers the latter a *Drymaria*.

4. Stellaria *media*, With.; *Smith. Flor. Antarct.* part i. p. 8.

Hab. Falkland Islands; abundant, but not indigenous. Amsterdam Island; *Lieut. Smith*, most probably introduced.

5. ARENARIA, *Linn.*

1. Arenaria *media*, Linn. *Sp. pl.* p. 606. *DC. Prodr.* vol. i. p. 401. *Hook. et Arn. in Bot. Misc.* vol. iii. p. 147. A. marina, *Smith, Engl. Bot.* t. 958.

Var. β, seminibus compressis, ala membranacea fere obsoleta cinctis.

Hab. Cape Tres Montes; *C. Darwin, Esq.* Var. β, Falkland Islands, St. Salvador Bay; *J. D. H.*

Some of Mr. Darwin's specimens have a very evident wing to their seeds, while in others it is not more conspicuous than in the Falkland Island plants, and never appears to afford a specific character.

Like some other littoral plants, the *Arenaria marina* or *media*, (including *C. rubra*, in part at least), has a very

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imbricatis breviter ovatis subacutis coriaceis basi in vaginam latissimam connatis marginibus subciliatis, pedunculis brevissimis, floribus inter folia summa sessilibus pentameris, perianthii segmentis late ovatis obtusis, capsula ad medium fissa.

Hab. Chili; La Pusilla, on the east side of the Andes, 10,000 feet; *Bridges*, n. 1244.

Caules 2 unc. longi, ramis 2–3 lin. latis. *Flores* inconspicui.

wide range in the temperate, but not in the tropical regions; for, though found in the Azores, Madeira, and the Canaries, it is absent in Ascension, and St. Helena; re-appearing in the Falklands; and while in the Pacific it inhabits New Zealand, and Juan Fernandez, it is not seen on the tropical South Sea Islands or the Galapagos. It abounds along the coasts of Europe, and shores of the Mediterranean, attaining the latitude of Shetland in the British dominions, and even entering the Arctic circle in Lapland. In Africa it grows at the Cape of Good Hope; but not on any part of the coast between that point and the mouths of the Nile. Further east, in Australia, this little plant commences in the parallel of 30°, thence extending to the extreme south of Tasmania. Arctic America presents it both on the east and west coasts, viz., California on the Pacific side, and Texas on the Atlantic. In South America, again, its range commences at Valparaiso, and terminates at Cape Tres Montes on the west, and it also inhabits the country lying between South Brazil and the Falklands on the east.

6. CERASTIUM, *Linn.*

1. Cerastium *arvense*, L.

Var. *strictum*, erectum, strictum, floribus paniculatis.

Var. *Fuegianum*, humile, foliis imbricatis, pedicellis solitariis terminalibus, floribus amplis.

Hab. Tierra del Fuego, south part; *C. Darwin, Esq.* Falkland Islands, very abundant; *Gaudichaud, J. D. H.* Var. β, Strait of Magalhaens, Port Famine; *Capt. King.* Var. γ, Mount Turn, 2000 feet; *C. Darwin, Esq.* Hermite Island, Cape Horn, on rocks and sand-banks near the sea; *J. D. H.*

An abundant and exceedingly variable Falkland Island plant, especially in the comparative length of its capsule, which is sometimes only half the length of, and at others, longer than the calyx. It is also very common in Chili, Patagonia, and in South Brazil.

2. Cerastium *vulgatum*, *L.*

Hab. Falkland Islands; plentiful near Port Louis, but certainly introduced.

IX. GERANIACEÆ, *DC.*

1. GERANIUM, *L'Hérit.*

Geranium *Magellanicum*, Hook. fil.; caule erecto? superne ramoso pilis retrorsum patentibus hirsuto, foliis caulinis pilosis longe petiolatis orbiculatis 5-partitis laciniis 3–5-fidis segmentis lineari-oblongis obtusis apiculatis, pedunculis pedicellisque elongatis retrorsum hirsutis, floribus amplis, sepalis sericeo-pilosis ovatis acutis breviter aristatis, petalis obovato-cuneatis retusis emarginatisve sepalis triplo longioribus, ovariis sericeis.

Hab. Strait of Magalhaens, Elizabeth Island; *C. Darwin, Esq.*

Caulis gracilis, 6–7-uncialis, superne parce dichotome ramosus, ramis divaricatis, siccitate striatis. *Folia* radicalia?, caulina $\frac{1}{4}$ unc. lata, fere ad basin partita, simubus acutis, laciniis cuneatis, segmentis ultimis ad apices rotundatis apiculatis. *Pedunculi* $1\frac{1}{2}$–2 unc. longi; pedicellis fere uncialibus. *Flores* magnitudine *G. Pyrenaici*.

Of this species there are but imperfect specimens in the herbarium of Mr. Darwin, by whom only it has been gathered; though without root-leaves and fruit, it may be recognized by the long peduncles, large flowers, and especially by the size of the petals.

The peduncle of one specimen is single-flowered.

2. Geranium *intermedium*, Bert.? *Walpers Repert. Bot. Syst.* vol. i. p. 450.

Hab. Chonos Archipelago; *C. Darwin, Esq.*

The single and most unsatisfactory specimen may possibly belong to this species, which is very imperfectly defined in the work quoted. Upper portion of stem, cauline leaf, peduncle, pedicel and calyx, covered with appressed pubescence, retrorse on the peduncles and petioles, very dense upwards on these parts. *Petals* cuneate, shorter than the sepals, which are attenuated into long aristæ.

3. Geranium *Patagonicum*, Hook. fil.; caule erecto pilis albidis patentibus hirsuto, foliis pilosis longe petiolatis orbicularibus 5–7-partitis laciniis obovato-cuneatis 3–5-fidis segmentis oblongis obtusis subacutisve apiculatis, petiolis pedunculis pedicellisque elongatis retrorsum hispidis, sepalis ovatis in aristam acuminatis sericeo-pilosis, petalis obovato-cuneatis retusis basi filamentisque ciliatis, carpellis lævibus aristisque patentim pilosis, seminibus oblongis piceis, testa reticulata.

Hab. Strait of Magalhaens, Port Famine; *Capt. King.*

Species *G. Caroliniano* proxima, sed differt petalis calyce duplo longioribus. *Caules* 7 unc. ad pedalem, inferne patentim superne retrorsum pilosi, parce ramosi. *Folia* 1½ unc. lata, pilosa, rarius glabriuscula, segmentis ultimis apicibus rotundatis apiculatis acutisve; petiolis interdum 3 unc. longis. *Pedunculi* infimi petiolis longiores, interdum 4 unc. longi, supremi breviores, omnes retrorsum pilosi. *Flores* magnitudine *G. dissecti*, sed petala calyce fere ½ longiora. *Fructus* fere 1 unc. longus; carpellis fuscis, obovatis.

One of the most ordinary forms of the genus, the species composing which, are perhaps more variable in all their parts and more widely diffused than is generally supposed. Except by the length of its petals, this is not distinguishable from the *G. albicans*, St. Hil., and the protean *G. Carolinianum* of North America: we have the same plant from Monte Video, and Port Desire, but not from the west coast of South America, and a very similar species from Australia.

4. Geranium *sessiliflorum*, Cav.; subacaule, radice crasso apice pluri-diviso, foliis radicalibus longe petiolatis appresse sericeo-pubescentibus reniformi-rotundatis 5–7-partitis laciniis cuneatis 4–7-fidis segmentis obtusis, petiolis retrorsum pilosis, pedunculis e ramis brevibus ortis petiolis multoties brevioribus 1–2 floris, pedicellis dense sericeis, sepalis ovatis subacutis, petalis obcordatis sepalis bis longioribus. G. sessiliflorum, *Cav. Diss.* vol. iv. p. 198. tab. 77. f. 2. *DC. Prodr.* vol. i. p. 639.

Hab. Strait of Magalhaens; *Commerson.* Cape Negro; *C. Darwin, Esq.*

Radix crassitie digitis humanæ, superne stipulis persistentibus foliorum delapsorum coronata. *Caules* breves prostrati, appresse retrorsum pilosi. *Folia* ¾ unc. lata, parce pubescentia, segmentis ultimis obtusis, apiculo nullo terminatis; petiolis 3-uncialibus. *Pedunculi* crassi, plerumque vix ½ unc. longi, sed interdum elongati, 1–2-flori. *Flores* diametro fere *G. Columbini*. *Petala* obcordata, sepalis bis longiora, basi (filamentaque lata) ciliata.

An easily recognized species in the state I have examined, by its habit, the size of the root, and the short peduncles, and branches or stem, which are however characters very liable to vary. Though placed by authors in the single-flowered section as the peduncles often bear two flowers.

The genus *Geranium*, though so widely dispersed, hardly inhabits the coldest countries either of the Northern or opposite Hemisphere, the Strait of Magalhaens marking its southern limit in the New, and Lord Auckland's group, or latitude 50°, in the Old World. In Arctic America, no species crosses the parallel of 52° to the eastward of the rocky mountains, but one (*G. erianthum*) reaches Sitka latitude 59° on the west of that range. In Asia that plant inhabits the same latitude in Kamschatka. No European species, except *G. sylvaticum* (the only Alpine English one), crosses the Arctic circle, while three are found in Iceland, the northern extremity of which stretches to

that parallel. One of the thirteen British species, *G. molle*, grows in the Shetland Islands. The *Gerania* abound on the lofty mountains of the tropics, at elevations where the climate is temperate, proceeding upwards to near the verge of perpetual snow. Professor Jameson states that three grow on the Andes of Columbia, between 12,000 and 14,000 feet, while on the Himalayah mountains only one species is seen below 5,000 feet, between which height and 12,000 the genus is limited.

X. OXALIDEÆ, *DC.*

1. OXALIS, *L.*

1. Oxalis *Magellanica*, Forst.; acaulis, pumila, radice crasso elongato squamoso, foliis trifoliolatis rotundato-obcordatis carnosiusculis subtus pallidioribus, scapo valido petiolis æquilongo infra florem bibracteolato, sepalis late oblongis obtusis petalis albidis ⅓ brevioribus. O. Magellanica, *Forst. Comm. Goett.* vol. ix. p. 33. *DC. Prodr.* vol. i. p. 700.

Hab. Cape Tres Montes, Patch cove, 2000 feet; *C. Darwin, Esq.* Hermite Island, at the level of the sea; *J. D. H.*

Radix seu *rhizoma* uncialis, crassa, descendens, squamis membranaceis dense obtecta, radiculas fibrosas hic illic emittens. *Petioli* ½ unc. longi, glaberrimi v. parce pilosi, basi supra stipulam vaginantem articulati; stipulis latiusculis, membranaceis, sursum in auriculas duas productis. *Foliola* vix ½ unc. longa, supra læte viridia, subtus pallidiora, glaucescentia, sub lente punctulata, utrinque lævia, glaberrima. *Pedunculus* erectus, petiolo æquilongus, bracteolis majusculis subulatis. *Sepala* glaberrima, retusa v. obscure triloba. *Petala* obovata, albida, ½ unc. longa. *Stamina* 10. *Styli* 5.

A very pretty little species, one of the smallest of the genus, nearly allied to the common Wood-sorrel of England, *O. Acetosella*. The leaves, as in all the *Oxalides*, have a very pleasant acid taste, but are too small to be employed, like those of the following, for any useful purpose.

2. Oxalis *enneaphylla*, Cav.; acaulis, rhizomate crasso repente bulbifero squamoso, foliis longe petiolatis 9–20 foliolatis, foliolis radiantibus plus minusve pubescentibus cuneato-obcordatis bilobis, pedunculis petiolo æquilongis unifloris bibracteolatis, floribus amplis, sepalis sericeis villosisve apice interdum bipunctatis, staminibus elongatis stylos hirsutos capitatos superantibus. O. enneaphylla, *Cav. Ic.* vol. v. p. 7. t. 411. *Gaud. in Ann. Sc. Nat.* vol. v. p. 105. *et in Freyc. Voy.* p. 137. *D'Urville, in Mém. Soc. Linn. Paris.* vol. iv. p. 616. *DC. Prodr.* vol. i. p. 702. *Hook. Icon. Plant.* t. 494. Vinaigrette, *Pernetty, Voy.* vol. ii. p. 54.

Var. β, *pumila*; minor, tota pubescens. O. pumila, *D'Urv.* l. c. p. 616. *Gaud. in Freyc. Voy.* l. c.

Hab. Falkland Islands; abundant, especially near the sea.

Rhizoma descendens deinde horizontale, 1–2-unciale, crassitie pollicis, simplex v. ramosum, bulbosum, basibus petiolorum stipulisque scariosis obtectum, apicem versus ascendens, dense tomentosum. *Folia* plurima; *petioli* 4–6 unc. longi, glabriusculi v. parce pilosi, supra stipulam obscure articulati; *stipulæ* lineares, scariosæ, rufo-brunneæ, sæpe tomento marginatæ; *foliola* horizontaliter radiantia, sæpissime serie duplici inserta, pilis fulvis sericea v. glabriuscula, carnosiuscula. *Pedunculi* petiolis subsimiles, sed supra medium bracteolati, bracteolis scariosis v. interdum villosis. *Sepala* oblonga, obtusa v. subacuta, rarius apicem versus bipunctata. *Petala* sepalis ter longiora, fere uncialia, obovato-cuneata, albida v. rosea, pulcherrime purpureo-venosa. *Stamina* 10, alternis brevissimis. *Styli* 5, stigmatibus capitatis terminati. *Capsula* sericea.

The pride of the Falklands, and peculiar to that group of Islands, where it grows in such abundance on the

banks overhanging the sea at Berkeley Sound, as to cover them with a mantle of snowy white during the spring month of November. The plant is an excellent antiscorbutic and agreeable pot-herb, though too acid except in tarts and puddings.

XI. CELASTRINEÆ, *Br.*

1. MAYTENUS, *Feuill.*

1. Maytenus *Magellanicus*, Hook. fil.; ramis teretibus pubescentibus, foliis alternis glaberrimis elliptico-ovatis utrinque attenuatis serratis coriaceis, floribus subsolitariis brevissime pedunculatis, bracteolis fimbriatis, calycis segmentis rotundatis, petalis ovato-oblongis obtusis, antheris ovato-cordatis, capsula compressa orbiculari-obcordata 2-loculari 2-valvi 2-sperma, seminibus basi arillo albido cupulari donatis, testa crustacea. Cassine Magellanica, *Lam. Ill.* n. 2590. *Encycl. Suppl.* vol. ii. p. 130. Celastrus? Magellanicus, *DC. Prodr.* vol. ii. p. 8. Celastrus Magellanicus, *Hook. Icon. Plant.* t. 537. Euthalis lucida, *Banks et Sol. in Bibl. Banks cum icone.*

Hab. Strait of Magalhaens; *Commerson.* Port Famine; *Capt. King.*

A plant, in every respect so nearly related to the *Maytenus Chilensis*, that I think it right to remove it to that genus from *Celastrus*. The only difference of structure lies in the cells of the capsule of this, having, as far as I can observe, no trace of a second ovule, which exists in the above mentioned species, ripening into a perfect seed. The characters that separate *Maytenus* from *Celastrus* are the solitary ovule of the latter, and membranous testa of its seed; in this plant the testa is nearly crustaceous; while in *M. Chilensis*, though a *Maytenus* in habit and in other respects, it is membranous. The size of the arillus is not of much importance, in the present species it is short, and forms a small cup to the base of the seed, and in the Chilian one it nearly envelopes that organ. Natural habit is perhaps most useful in distinguishing some of these genera from others; nothing can be more unlike the type of the genus *Celastrus* (*C. scandens*, L.), than this; for it not only closely resembles the *M. Chilensis* (the original species), but others, equally inhabitants of extra-tropical South America.

2. MYGINDA, *Jacq.*

1. Myginda *disticha*, Hook. fil.; ramis puberulis distichis divaricatis, foliis glaberrimis alternis distichis parvis brevissime petiolatis lineari-oblongis subacutis integerrimis marginibus tenuiter recurvis nonnullis apiculatis, floribus axillaribus solitariis brevissime pedicellatis unifloris, capsula coriacea abortu 1-loculari 1-sperma, arillo membranaceo fere operto.

Hab. Strait of Magalhaens; Port Famine; *Capt. King.*

Frutex v. *Arbuscula*? *Rami* teretes, pube tenui fuliginoso donati, hic illic cicatricati. *Folia* perplurima, ¼ unc. longa, omnia horizontaliter patentia, coriacea, uninervia, supra medio sulcata, cinereo-olivacea, sub lente subtilissime nigro-punctata, subtus pallidiora, margine recurvo, suprema apiculo calloso terminata. *Flores* inconspicui; pedicellis bibracteolatis; bracteolis margine ciliatis. *Calycis segmenta* rotundata. *Petala* immatura calyce bis longiora, ovato-rotundata. *Capsula* 3-linearis, oblique oblonga, coriacea, lineis atris notata, intus costis 2 oppositis elevatis percursa, hinc spurie bilocularis. *Semen* unicum, capsulam totam implens, fusco-brunneum, vix maturum, arillo membranaceo undulato fere omnino indutum.

Of this plant I have only the ripe fruit and very young buds: it appears a true *Myginda*, although with a coriaceous, instead of a bony capsule. The leaves are constantly alternate, as they sometimes appear on the *M. rhacoma* and *M. pallens*.

XII. RHAMNEÆ, *Br.*

1. COLLETIA, *Comm.*

1. Colletia *discolor*, Hook.; glaberrima, ramis rigidis teretibus parce foliosis hic illic spinosis, foliis oppositis elliptico-oblongis obovatisve obtusis obscure serratis in petiolum brevem attenuatis subtus pallidioribus, pedunculis axillaribus unifloris, calyce quadrifido, fructu 3-cocco, coccis pilosis monospermis, testa crustacea nitida. C. discolor, *Hook. Icon. Plant.* t. 538.

Hab. Strait of Magalhaens, Port Famine; *Capt. King.*

Frutex spinescens, spinis oppositis plerumque articulatis, rarius ad articulos foliiferis, ramis cortice levi obtectis. *Folia* ½-uncialia, breve petiolata, subcoriacea, supra nigrescentia, subtus pallide virescentia, apice sæpe emarginata. *Pedicelli* floriferi sub 2 lin. longi, fructiferi elongati, robusti, infra calycem gradatim incrassati. *Calyx* urceolatus. *Fructus* majusculus, calyce dilatato suffultus. *Semina* polita, castanea.

XIII. LEGUMINOSÆ, *Juss.*

1. ADESMIA, *DC.*

1. Adesmia *pumila*, Hook. fil.; parce subviscide pubescens, caule brevi simplici v. ramoso herbaceo, stipulis late vaginantibus sursum in auriculas latas obtusas productis, petiolis gracilibus, foliolis 3–5-jugis coriaceis obovato-cuneatis obscure ciliato-dentatis, pedunculis unifloris gracilibus petiolo æquilongis, calyce campanulato basi subæquali, vexillo calyce bis longiore dorso glabriusculo, stylo elongato, ovario pluriovulato, legumine pubescenti lineari-compresso ad articulos crenato.

Hab. Strait of Magalhaens, Port Gregory; *Capt. King.* Cape Negro; *C. Darwin, Esq.*

Herba pumila, 2–5-uncialis. *Folia* ½–1 unc. longa; foliola ¼ uncialia, siccitate flavescentia, anguste obovato-cuneata, apice rotundata, enervia. *Flores* solitarii, suberecti, pro planta majusculi, flavi, purpurascentes? *Vexillum* fere ½ unc. longum. *Legumen* sub 10-articulatum.

2. Adesmia *lotoides*, Hook. fil.; appresse sericea, caule basi diviso lignoso gracili ascendente rarius abbreviato, ramis terminalibus, stipulis late vaginantibus superne in auriculas breves divergentes productis, petiolo nullo, foliolis 2 in stipulam sessilibus lanceolatis acuminatis utrinque sericeis, pedicellis axillaribus unifloris folio bis terve longioribus, calycis basi æqualis dentibus ovatis subulatis, vexillo dorso glaberrimo marginibus sparse sericeo-ciliatis unguc brevi callo barbato aucto, alarum lamina lineari-oblonga, carina dolabriformi marginibus subciliatis, stylo ascendente gracili elongato.

Hab. Strait of Magalhaens, Cape Gregory; *Capt. King.* Elizabeth Island; *C. Darwin, Esq.*

Caules graciles, interdum spithamæi, rarius abbreviati, sublignosi. *Folia* pilis sericeis appressis cana, basi in stipulam vaginantem latiusculam dilatata, ½–¾ unc. longa, lanceolata v. elliptico-oblonga, acuta, integerrima. *Pedunculi* elongati, pubescentes. *Flores* suberecti, calyce sericeo, petalis flavis, vexillo fere ½ unc. longo.

The species of this genus are particularly numerous in Patagonia, considering the very scanty nature of its Flora, and are characteristic of a dry and warm climate, rather than of the Fuegian vegetation. Thus we do not find them on the west coast of South America, southward of the parallel of Valdivia; but on the east, they descend to 52°, and even enter the Strait of Magalhaens, inhabiting its shores so long as these partake of the character of the

plains of South-eastern America. Many of the Patagonian species being new, I have drawn up a list of them, with characters of those hitherto undescribed, which is added below.*

* Enumeration of the species of *Adesmia*, inhabiting the plains of Patagonia, between the latitudes of Bahia Blanca 42° south, and the Strait of Magalhaens, and between the Andes on the west, and shores of the South Atlantic on the east.

1. *Inermes, floribus axillaribus solitariis, foliis 2–3 foliolatis.*

1. A. *suffocata*, n. sp.; pumila, argenteo-sericea, dense cæspitosa, caule lignoso ramoso, ramis robustis subtortis basi vestigiis foliorum tectis apicibus foliosis, foliis confertis trifoliatis breviter petiolatis, foliolis erectis obovatis integerrimis, floribus inter folia sessilibus, calyce breviter campanulato segmentis subacutis, vexillo late orbiculato dorso sericeo marginibus inflexis, alis longe unguiculatis lobulo intus barbato, carinæ petalis falcatis cymbiformibus longe unguiculatis dorso sericeis, stylo brevisculo.

Hab. Port Desire; *C. Darwin, Esq.*

Rami crassitie pennæ corvinæ, lignosi. *Folia* ¼–unc. longa, petiolo valido 2 lin. longo albido-villoso, foliolis conduplicatis utrinque dense sericeis. *Pedunculi* brevissimi. *Calyx* basi superne gibbosus. *Vexillum* majusculum, coriaceum.

2. A. *lotoides*, n. sp. v. supra.

Var. β, *vaginata*; petiolo perbrevi foliolis longioribus, stipulis majoribus, vexillo extus sericeo basi callo barbato destituto, carina angustiore.

Hab. Strait of Magalhaens, Cape Gregory; *Capt. King.* Elizabeth Island; *C. Darwin, Esq.* Var. β, Port Desire; *C. Darwin, Esq.*

2. *Inermes, floribus axillaribus solitariis, foliis pinnatis.*

3. A. *pumila*, n. sp. v. supra.

Hab. Strait of Magalhaens; *Capt. King, C. Darwin, Esq.* Cape Fairweather; *Capt. King.*

4. A. *villosa*, n. sp.; tota pilis molliter sericeis patentibus obtecta, caule herbaceo prostrato ascendente parce diviso, stipulis membranaceis majusculis sursum in auriculas breves obtusas productis, petiolis gracilibus, foliolis 5–7-jugis obovato-cuneatis utrinque sericeis, pedunculis petiolo brevioribus, floribus amplis, calyce membranaceo segmentis elongatis lineari-subulatis, vexillo calycem paulo superante orbiculato extus piloso, stylo elongato, legumine 2–3-articulato ad articulos constricto subsericeo, seminibus paucis.

Hab. Port Desire; *C. Darwin, Esq.*

Herba 2–3-uncialis, habitu *Astragali*. *Folia* patentia, 1–1½ unc. longa, foliolis ½ unc. stipulis vaginantibus æquilongis. *Flores* conspicui. *Calyx* superne gibbosus, laciniis gradatim acuminatis, pilis sericeis tectis, inferioribus reflexis. *Corolla* ut videtur flava.

5. A. *lanata*, n. sp.; tota lanata, caule basi lignoso diviso, ramis diffusis suberectis gracilibus teretibus, stipulis subvaginantibus in auriculas acutas divergentes productis, foliolis parvis 3–5-jugis lineari-oblongis obtusis, pedunculis folio brevioribus, calyce elongato laciniis lineari-subulatis, vexillo calyce paulo superante elliptico-oblongo dorso tomentoso, alarum unguibus laminis æquilongis, stylo elongato, legumine 3-articulato, seminibus latis.

Hab. Port Desire; *C. Darwin, Esq.*

Radix lignosa. *Rami* 6 unc. longi, graciles, teretes, ut tota planta, pube molli lanata tecta. *Stipulæ* 1½ lin. longæ. *Petioli* 1½ unc. longi, graciles. *Foliola* angusta, patentia, 2 lin. longa. *Flores* forma et magnitudine *Viciæ sativæ*, purpureæ? *Alarum* nervi medii trabeculis arcuatis connexi. *Legumen* ad articulos vix contractum.

2. VICIA, *L.*

1. VICIA *Magellanica*, Hook. fil.; glabriuscula, caule gracili angulato flexuoso parce folioso apicibus solummodo puberulis, stipulis semisagittatis apice lobuloque acuminatis, petiolis elongatis, foliolis unijugis

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3. Racemus, floribus racemosis, foliis pinnatis.

6. A. *Smithiæ*, DC. *Prodr.* vol. ii. p. 319.

HAB. Bahia Blanca; *C. Darwin, Esq.*

7. A. *affinis*, n. sp.; glanduloso-pubescens, caule decumbente (?) herbaceo ramoso, stipulis parvis, foliis imparipinnatis, foliolis 6–7-jugis petiolatis lineari-oblongis emarginato-truncatis obscure ciliato-dentatis, pedunculis axillaribus nudis elongatis, floribus parvis pedicellatis, calyce æquali basi 5-fido segmentis acutis, vexillo calyce subduplo longiore.

HAB. Bahia Blanca; *C. Darwin, Esq.*

Ab *A. dentata* cui proxima differt foliolis lineari-oblongis, et junioribus glabriusculis non subtomentosis; ab *A. Smithiæ* racemo nudo, calyceque vexillo breviore.

8. A. *conferta*, Hook. et Arn. *in Bot. Beechey*, p. 20. *et in Miscell.* vol. iii. p. 189.

HAB. Port St. Julian; *C. Darwin, Esq.*

Species ut videtur late diffusa, per utramque oram Americæ Meridionalis inter gradus lat. merid. 33° et 50° obvia.

9. A. *candida*, n. sp.; frutescens, tota tomento tenui arcte appresso candido, ramis lignosis teretibus superne paniculatim ramosis, foliis sparsis, stipulis parvis deciduis, petiolo crassiusculo compresso superne canaliculato subarticulato, foliolis 3–5-jugis ovali-oblongis utrinque rotundatis coriaceis integerrimis enervis, racemis terminalibus laxis, floribus pendulis breviter pedicellatis, basi bracteolatis, calyce sericeo-pubescente vexillo glaberrimo ½ breviore segmentis subacutis.

HAB. Patagonia, east coast; *Mr. Eights.*

Rami validi, lignosi, crassitie pennæ anatinæ, teretes. *Folia* 2-uncialia, foliolis 2–4 lin. longis, marginibus subrecurvis. *Flores* parvi, ½ unc. longi, pedicellis bis longioribus.—*A. pedicellatæ* affinis, sed differt præcipue pedicellis brevibus. Ad sectionem *Chætotricham*, DC. pertinet.

10. A. *grisea*, n. sp.; suffrutescens, incano-pubescens, ramis ramulisque gracilibus subflexuosis, stipulis parvis subulatis, petiolo gracili, foliolis 3–5-jugis lineari-obovatis obtusis apiculatis integerrimis utrinque appresse subsericeis, racemis subterminalibus elongatis pauciforis, pedicellis brevibus basi bracteolatis calyce breviore, segmentis calycinis brevibus subulatis, vexillo dorso sericeo.

HAB. Patagonia, south latitude 40°; *Mr. Tweedie.*

Caulis prostratus? *Rami* teretes, crassitie pennæ passerinæ, spithamæi, grisei. *Folia* pollicaria, foliolis 2–3 lin. longis, ¾ lin. latis, nervo in mucronem brevem desinente percursis. *Flores* versus apices pedunculi gracilis pauci sub 5, flavi, ½ unc. longi, vexillo calyce bis longiore. *A. incanæ*, Vogel, affinis, sed rami non patentim pilosi, nec foliola acuminata.—Species *altera similima*, *A. angulata*, mihi, ad flumen Uruguay a Tweedie detecta, differt ramis ascendentibus angulatis, floribus majoribus, segmentisque calycinis elongatis.

11. A. *boronioides*, n. sp.; suffruticosa, glaberrima glandulis verrucæformibus undique sparsa, caule ramisque ascendentibus teretibus lignosis articulatis, foliis elongatis, stipulis inconspicuis, petiolo crasso, foliolis parvis alternis

rarius bijugis lineari-elongatis acuminatis glaberrimis, pedicellis axillaribus solitariis uniforis folio brevioribus, calyce brevi pubescente vexillo $\frac{1}{3}$ breviore dentibus subulatis.

HAB. Strait of Magalhaens, Elizabeth Island; *C. Darwin, Esq.*

Caulis spithameus, parce ramosus, gracillimus, glaberrimus. *Folia* remota, patentia; *stipulæ* 3 lin. longæ, subulatæ; *petiolus* $\frac{1}{4}$–$\frac{3}{4}$-uncialis, strictus, in cirrhum desinens; *foliola* petiolo longiora, sub 1 lin. lata, enervia, integerrima, gradatim acuminata, viridia, juniora parce sericeo-puberula. *Pedicelli* graciles, petiolum paulo superantes, puberuli supra medium bibracteolati, bracteolis minimis inconspicuis. *Flores* magnitudine fere *V. Bithynice* cui accedit. *Calyx* 2 lin. longus, basi rotundatus.

The plants of this genus, though widely diffused throughout the temperate regions of South America, apparently reach no further south than the Strait of Magalhaens, and are more characteristic of the vegetation of the west than the east coast. The present seems distinct from the highly variable species of Chili and Buenos Ayres, in its marginate leaflets and solitary large flowers; upon the former of these characters much stress cannot be laid, for the presence of bracteolæ on the pedicel indicates a tendency to branch, and a plant from Cape Fairweather, so similar to this in all other respects that I consider it a variety, has two and even three flowers on the peduncle, which is elongated beyond the leaves.

2. VICIA *Kingii*, Hook. fil.; parce pilosa, caule gracili erecto simplici v. parce ramoso angulato, stipulis angustè semisagittatis lobulo deflexo apice acuminato, petiolis elongatis compressis in cirrhum ramosum desinentibus, foliolis 3–5-jugis oppositis alternisve utrinque pilosis lineari-obovato-oblongis elongatis integerrimis apiculatis apicibus obtusis bidentatisve, pedunculis axillaribus sericeis 1–2-floris petiolo multoties brevioribus, calyce brevi appresse sericeo breviter quinquefido segmentis acutis.

HAB. Strait of Magalhaens, Port Famine; *Capt. King.*

Caules bipedales, graciles, parce ad nodos pilosi, 3–5-angulati. *Folia* remota, patenti-recurva; *stipulæ* parvæ, 1–1½ lin. longæ; *petioli* 1½–2-unciales, compressi, vix alati; *foliola* ½–¾ unc. longa, basi attenuata, deinde linearia, apicibus rotundatis mucronatis non raro dentibus duobus auctis, venis subparallelis. *Pedunculi* ½ petioli subæquantes. *Flores* suberecti, flavi? *Calyx* 1½ lin. longus. *Vexillum* calyce bis terve longius. *Legumina* immatura pendula, glaberrima, 8-sperma.

Allied to the *V. bidentata*, Hook., of Chili, which is entirely smooth, with leaflets broader and shorter in proportion, stipules twice as broad as in this plant and the cirrhi simple.

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oppositisve 10–15-jugis sessilibus late obovatis grosse dentatis coriaceis, racemis lateralibus terminalibusque obtusis, pedicellis brevissimis bracteolatis, calyce late ovato breviter 5-fido puberulo vexillo glaberrimo ter breviore.

HAB. Cape Fairweather; *Capt. King.* Port Desire; *C. Darwin, Esq.*

Suffrutex, fragilis. *Rami* spithamæi, crassitie pennæ corvinæ, cortice pallide rufo tecti, obscure striati, glandulis majusculis verrucosi, ad baseos foliorum articulati. *Folia* 3–4-uncialia, foliolis 2 lin. longis flavescentibus crassis coriaceis. *Pedunculi* 3–4-pollicares, multiflori, superne parce pilosi, bracteolis oblongis, pedicellis calyce brevioribus. *Flores* patentes, ½-unciales, flavi. *Legumen* late lineare, valde compressum, 3-articulatum, articulis subdistantibus, glandulis grossis nigro-punctatum.

4. Spinescentes, floribus solitariis.

13. A. *trijuga*, Gill. MSS. *Hook. et Arn. in Bot. Misc.* vol. iii. p. 191.

HAB. Port Desire; *C. Darwin, Esq.*

3. Vicia *Patagonica*, Hook. fil.; parce pilosa, caule erecto angulato vix alato parce ramoso, stipulis late semisagittatis interdum dentatis apicibus lobuloque deflexo acutis, petiolo brevi usculo subangulato in cirrhum simplicem desinente, foliolis 1–2-jugis alternis oppositisque obovato-oblongis integerrimis ad apices rotundatis retusis dentatisve utrinque subsericeo-pilosis, pedunculis petiolo longioribus sericeis axillaribus 1–2-floris, calyce sericeo breviter quinquefido vexillo erecto ter breviore.

Hab. Strait of Magalhaens, Port Famine; *Capt. King*.

Caules spithamæi, quam in præcedentibus robustiores, substricti. *Folia* suberecta; *stipulæ* 1½ lin. longæ, semisagittatæ v. triangulares, interdum grosse dentatæ, segmentis omnibus acutis; *petioli* vix ½ unc. longi, cirrho brevi; *foliola* ½–¾ unc. longa, *Pedunculi* longitudine varii, petiolo semper longiores. *Flores* ut in præcedente.

This differs from the V. *bidentata*, Hook., not only in the same points, except the cirrhi, as the last species, but in the few leaflets. The broad leaflets, simple cirrhi and differently shaped stipules, short and erect petioles, well distinguish it from *V. Kingii*. Though these three plants have much *affinity*, I *consider them distinct*; having compared them with extensive suites of the Chilian and Buenos Ayrean species, with none of which they accord. Some of the latter again, are very widely dispersed, and it appears to me probable, that more than one Chilian species is common also to North America, and to the higher mountains of Mexico, Columbia and Peru.

3. LATHYRUS, *Linn.*

1. Lathyrus *Magellanicus*, Lam.; glaberrimus, nigricans, caule subrecto angulato ramoso, stipulis late oblongo-ovatis, foliolis plerumque latioribus subacutis basi contractis costatis utrinque in lobulis 2 acutis divaricatis productis, cirrhis trifidis, foliolis elliptico-oblongis lanceolatisve plerumque apiculatis 3–5-nerviis, pedunculis folio longioribus versus apices 3–4-floris. L. Magellanicus, *Lam. Encyclop. Méth.* vol. ii. p. 708. *DC. Prodr.* v. ii. p. 370. *Sweet, Br. Fl. Gard. 2nd Ser.* t. 344.

Hab. Strait of Magalhaens; *Commerson*.

Spithamæus ad pedalem, siccitate nigricans. *Caulis* ut videtur erectus, parce ramosus. *Folia* pro planta magna; *stipulæ* magnitudine variæ, ½–¾ unc. longæ, integerrimæ; *petioli* stricti, parte infra folium ½ unc. longa, in cirrhum strictum ad apicem ramosum desinentes; *foliola* 1–2 unc. longa, integerrima, nervis parallelis 3–5. *Pedunculi* 6-unciales, erecti. *Flores* pedicellati, magnitudine *L. sylvestris*. *Calyx* brevis, glaberrimus.

I have seen no specimens of this from the Strait of Magalhaens; those from which the foregoing description is drawn up having been gathered at Cape Fairweather, a few miles northward of Fuegia proper, on the east coast of Patagonia, by Capt. King, in whose collection there exists a third species from the same locality, perhaps only a variety of *L. nervosus*, Lam. (*Hook. Bot. Mag.* t. 3987.) The *L. Magellanicus* is hardly distinguishable from a probably undescribed Peruvian species.

2. Lathyrus *pubescens*, Hook. et Arn.; glabriusculus v. molliter pubescens, caule angulato alato ramoso, stipulis semisagittatis apice lobuloque deflexo acuminatis petiolum anguste alatum dimidio æquantibus, foliolis uni- rarius bi-jugis oblongo-lanceolatis apiculatis multinerviis, pedunculis folio multo longioribus 5–7-floris, floribus breviter pedicellatis, calyce sericeo segmentis lanceolato-subulatis, vexillo calyce quadruplo longiore, legumine pubescente. L. pubescens, *Hook. et Arn. in Bot. of Beechey's Voyage*, p. 21. *Bot. Misc.* vol. iii. p. 197. *Hook. Bot. Mag.* t. 3996. L. petiolaris, *Vogel in Linnæa*, vol. xiii. p. 29. *fid. Herb. Reg. Berol.*

Hab. Chonos Archipelago; *C. Darwin, Esq.*

The most southern habitat of *L. pubescens*, a handsome and widely distributed species, inhabiting all the

country between Valparaiso and south latitude 45° on the west coast of South America, and between South Brazil and Bahia Blanca on the east, also found on the intervening Cordillera and shores of the river Parana.

3. Lathyrus *maritimus*, Big. *Fl. Boston.* vol. ii. p. 268. *Hook. Brit. Fl.* ed. 5. p. 90. Pisum maritimum, *Linn. Sp. Pl.* 1027. *DC. Prodr.* vol. ii. p. 368. *Engl. Bot.* t. 1046. Lathyrus pisiformis, *Hook. Flor. Bor. Am.* vol. i. p. 158.

Hab. Cape Tres Montes; *C. Darwin, Esq.*

A most attentive comparison of Mr. Darwin's plant with European specimens of *Lathyrus maritimus* has forced upon me the conclusion, that this species, so very common in many parts of the north temperate and frigid zone, only inhabits in the south one of the most remote and little-visited spots of the American continent. The nature of the vegetation in the Peninsula of Tres Montes with the absence of other introduced plants forbid the supposition that this could have been imported, even were it in common cultivation either as an ornamental or culinary herb. No one, indeed, can read the accounts given by our voyagers of that wild and desolate portion of the west coast of Patagonia, (well known from being the scene of the "Narrative of what befell the Anna Pink," *) without a conviction that it is the last place in the world where an introduced vegetation may be expected. Mr. Darwin† remarks that the Indian race is extinct there, and such is the unfrequented appearance of the coast, that a piece of wood with a nail in it is picked up and studied as if covered with hieroglyphics; doubtless with feelings in which any one can participate who has unexpectedly fallen in with a work of art on a hitherto untrodden shore, and which vividly recall the page and the line of Defoe's unrivalled work, where the youthful reader is as startled to read of, as Robinson Crusoe was to see, "the footstep of a man in the sand."

Cape Tres Montes is also described by Capt. Fitzroy as another Tierra del Fuego, "a place swampy with rain, tormented by storms, without even the interest of population, for hitherto we had neither found the traces nor heard the voice of natives,"‡ Three deserters, whose open boat, their last remaining hope of reaching civilization, had failed them, lived for thirteen months here on seal's flesh, wild celery and shell-fish, unable to pursue their journey by land, so rugged are the shores and so impervious the low forests. Such is the nature of the coast where alone in the southern hemisphere this plant grows, though apparently not so abundantly as on the beach in some parts of England, else the sailors in question might have improved their daily fare, for Dr. Caius says, that *Lathyrus maritimus*, during the famine of 1556, afforded nourishment to thousands of the people upon the Suffolk coast, who had overlooked it while in their prosperity, and when driven by hunger to seek some manna in the wilderness, deemed its appearance miraculous; so ready, as Sir James Smith observes, is man to remember his Maker when in distress, whilst at other times he neglects what, like the best gifts of Providence, is always within his reach.

Being very much a maritime plant and one of a quickly propagated tribe, it is not surprising that *L. maritimus* enjoys a widely extended range in the northern hemisphere. Still there are some peculiarities worthy of notice, even here, in its distribution. In Great Britain, though abundant wherever it does grow, the plant is singularly local; a few spots on the east and south coasts are its sole recorded habitats; the Shetland Islands, where an Arctic variety is seen, being its only Scottish, and Kerry its only Irish station. It is also a native of Iceland and Greenland. The English Channel seems its southern European limit§, whence it passes along the shores of Belgium and up the Baltic Sea and inhabits the east coast of Norway as far as 70°, becoming more frequent beyond the parallel of 60°

* The 'Anna Pink' was one of the squadron which accompanied Commodore Anson's disastrous Expedition.

† Darwin's Journal in Murray's Home and Colonial Library, p. 282.

‡ Voy. of the Adventure and Beagle, vol. ii. p. 370.

§ De Candolle gives Nice on the Mediterranean as a station, which I have not seen confirmed, (Bot. Gall. vol. iv. p. 586).

the eastward of the north Cape again, it is plentiful throughout Lapland, to the Sea of Archangel; but does not cross the longitude of the Ural mountains; thence to the sea of Okhotsk, that is all over the Siberian plains, it is replaced by the *Lathyrus pisiformis**, L. (fide Ledebour), but re-appears to the extreme east of the continent of Asia, in Okhotsk and Kamschatka, affording another of those singular features in the Siberian Flora to which I have alluded in the note at p. 211 of this volume. In North America, commencing on the west coast, it is to be found at the Oregon † river in 46°, and north to Kotzebue's Sound under the Arctic circle; in central North America, it attains the same latitude and that of the Arctic Ocean, besides following the great rivers up to their sources in those inland seas, Lake Erie, &c. Upon the east coast of America it extends from New York no further north than Labrador, in latitude 55°; a limit upwards of 11 degrees nearer the tropic than what it attains in Europe, eastern Asia, or western America. Lastly, in South America it re-appears in the latitude of 47°, or nearly that of the Oregon.

The geographical distribution of *Lathyrus maritimus* naturally leads to that of the vast and important natural family to which it belongs; but in the present case I shall confine my remarks on this subject to the tribe *Papilionaceæ*, which alone extends into the frigid regions of the northern hemisphere. The prevalence of this group, to the almost total exclusion of the *Mimoseæ*, *Swartzieæ*, and *Cæsalpineæ*, in all latitudes north of the Mediterranean Sea in Europe, of the Caspian and Altai range in Asia, and of latitude 37° north, in the New World; or, in general terms, to the northward of the parallel of 40°; is an obvious fact: for the *Papilionaceæ* constitute a large proportion of the flowering plants from those limits up to the everlasting ice of the Polar Ocean. In the opposite hemisphere, however, a wholly different state of things prevails with that tribe. In South Australia and Tasmania the *Mimoseæ* rival the *Papilionaceæ* in abundance. In New Zealand only five species of the Natural Order are found in the whole extent of the Islands, from 36° to 46° south, and none beyond, in Lord Auckland's group and Campbell's Island; whilst in Fuegia proper they are unknown. To the northward of the Strait of Magalhaens they commence, accompanied with the *Mimoseæ*. In both hemispheres the Order diminishes in the proportion of its species to those of *Compositæ* and *Gramineæ*, when proceeding beyond the temperate towards the frigid zone; in the northern accompanying those Orders to 75° in America, or six degrees below the extreme limit of vegetation; while, in the southern regions of the old world, it disappears at 46°, and in those of the new at 52°, or twelve degrees short of the latitude which some other terrestrial plants attain.

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* The accurate Gmelin says of this plant, "omni per Siberia occurrit." Ledebour assigns to it all middle and southern Russia, from the Caucasus to St. Petersburgh in Europe, and all Asia, lying between the Caspian and latitude 60° north, and east to the Baikal sea. This range is enormous, when we consider that *Lathyrus pisiformis* is not an inhabitant of any other part of the globe, nor a littoral plant; hence, though scattered over an area included between twenty degrees of latitude and 100 of longitude, it is, in comparison with the *L. maritimus*, a local species, and confined by tolerably well marked geographical limits, namely by the polar circle in Arctic Russia and Siberia, by the Caucasus, Caspian and Aral seas and the Altai range on the south, by the Gulf of Bothnia and the Carpathians on the west, and the mountains of eastern Siberia in the opposite quarter. On the other hand, the species with which I have compared it, acknowledges no fixed limits; in Europe it as evidently seeks the Ocean as the other avoids it, whilst in North America it crosses a whole continent. Gmelin's fifth species of *Lathyrus* is very probably the *L. maritimus*, whose range he states to be from the river Aldan as far as Kamschatka, thus commencing where *L. pisiformis* terminates. His description tallies well with that plant.

† I exclude the Californian locality, for it is doubtful whether the plant of that country be the same as the European.

XIV. ROSACEÆ, *Juss.*

1. GEUM, *Linn.*

1. GEUM *Magellanicum*; Commers., *ex Pers. Ench.* vol. ii. p. 57. *DC. Prodr.* vol. ii. p. 554. *Don, Encyclop.* vol. ii. p. 527. G. coccineum, *Seringe, in DC. Prodr.* vol. ii. p. 551. *Smith, Sibthorpe, etc. Lindley, Bot. Reg.* t. 1088. G. Chilœnse, *Balbis, (fid. Ser. in DC.* l. c.). *Hook. et Arn. in Bot. Miscell.* vol. iii. p. 305. *Don, Encycl.* vol. ii. p. 526. G. Chilense, *Lindl. Bot. Reg.* t. 1348. G. Quellyon, *Sweet, Brit. Fl. Garden,* Ser. 1. vol. iii. t. 292. Caryophyllata foliis alatis, &c. *Feuill. Per. et Chili,* vol. i. p. 736. t. 27.

HAB. Strait of Magalhaens, *Commerson*; Port Famine, *Capt. King*; Cape Negro, *C. Darwin, Esq.*

I have restored the trivial name of *Magellanicum*, feeling convinced that Commerson, who collected more plants in the Strait of Magalhaens than any other person, could not have overlooked the present and only species of the genus that is abundant in that locality, and which agrees with the scanty description published by Persoon. Its very close affinity with the *G. coccineum*, of the 'Flora Græca,' has led to much discussion. Seringe first published them as one plant, probably discrediting the American habitat assigned to it by Balbis, from whom he received garden specimens under the name of *G. Chiloense*. Dr. Lindley next described and figured the Chilian plant and also referred it to *G. coccineum*; but in a following number of the 'Botanical Register,' after an attentive comparison of the Chilian with Sibthorpe's specimens, he disunited them, on account of the terminal lobe of the leaf of the Chilian being smaller and the lateral larger than in the Greek plant. Sweet disregards Balbis' name of *Chiloense*, proposing that of *Quéllyon*, affirming that the *G. coccineum* is very different, and probably a *Sieversia*; he neither gives his reasons for separating them nor for considering the Greek plant a *Sieversia*, though possibly he judges from its resemblance to *S. montana*. Lastly, Don says of *G. Magellanicum* that his is perhaps a *Sieversia*, but neither does he state why.

Of *G. Magellanicum* I may remark, that it is an exceedingly variable species in stature, in the size of its petals, and form of the leaves, which have large or small lateral and terminal lobes indifferently. Again, the flowers of the wild specimens are certainly very often yellow, and about twice as large as the calyx; while in the garden plant they are much larger and more or less red or scarlet. The flowering stems vary from three inches to nearly two feet high and the leaves from two inches to one foot long. The segments of the calyx are generally shortly ovate, but in one specimen from Mr. Macrae they are almost lanceolate. The whole plant varies in pubescence. Its range is from Valparaiso to the strait of Magalhaens, whose northern shore it skirts, ascending on the east coast of Patagonia as far as Cape Fairweather. Inland it inhabits both flanks of the Andes, from whence no doubt it has been transported eastward for some distance into the Patagonian plains, for Mr. Darwin collected it on the river Santa Cruz, 250 miles above the sea, where it was accompanied by some other plants foreign to the greater part of the east coast of South America. In Peru this species is replaced by another with small petals, more characteristic of the North American forms of the genus.

The first plant with which I would compare the present is *G. Capense*, which has longer calycine segments than the ordinary states of *G. Magellanicum*, but does not otherwise differ except in the rather slenderer awns to the carpels. I have compared two African specimens with a large suite of the *G. Magellanicum*, and have no reason to suppose them specifically distinct. Of the true *G. coccineum* of Sibthorpe's 'Flora Græca' we have three excellent specimens, from the collections of Aucher-Eloy, gathered on Mount Olympus, and another from Rumelia under the name of *G. Sadleri*, Friv., which the accurate Grisebach unites with *G. coccineum*; but they do not enable me to detect any character different from the South American plant, nor even to retain them as separate varieties. The calycine segments of both vary in size, and in the same proportions, the incisions of the margins of the leaf of the European

are narrower and more acute than in the ordinary Chilian form, but are in this respect undistinguishable from some collected by Gillies; the carpels of the two are identical. The *G. elatum*, of Kamaon, judging from Dr. Wallich's specimens, does not at first sight appear to differ from this, except in the comparatively smaller terminal and the sessile lateral lobes of the leaf. Dr. Royle has placed it in *Sieversia*, to which genus Mr. Edgeworth assures me that it belongs. The nearest, but evidently distinct, species allied to *G. Magellanicum* are *G. Pyrenaicum*, easily recognised by the great size of its carpels, and *G. sylvaticum* of the South of France and Spain, which is a single-flowered plant.

2. GEUM *parviflorum*, Commerson; velutino-pubescens, rhizomate crasso, foliis radicalibus interrupte pinnatisectis lobo terminali rotundato obscure 5-lobato crenato lateralibus 2–3-jugis multoties minoribus, pedunculis folio brevioribus elongatisve pubescentibus folia 2–3 lyrato-pinnatifida gerentibus, floribus 4–5 ad apicem pedunculi sessilibus nutantibus folio involucratis, petalis laciniis calycinis subæquantibus albis? ovarii stylo hamato, carpellis pilosis. G.? parviflorum, *Commerson ex Smith in Rees Cycl.* vol. v. p. 16. *DC. Prodr.* vol. ii. p. 553. *Don, Encycl.* vol. ii. p. 527. G. involucratum, *Juss. Herb. in Pers. Ench.* vol. ii. p. 57. *DC. et Don*, l. c.

HAB. Strait of Magalhaens; *Commerson.* Port Famine; *Capt. King.*

Rhizoma pollicem crassum. *Folia* fere omnia radicalia, patentia, 1½–2 unc. longa, pilis fulvis dense velutina, lobo terminali ¾ unc. lato, plicato, lateralibus irregulariter inciso-dentatis. *Pedunculi* 3, unico foliis breviore, cæteris elongatis erectis ter longioribus, omnes basi nudi, apices versus folia 1–2 gerentes. *Flores* in capitulum aggregati, sub ½ unc. diametro, albi (fid. *Commerson*). *Calycis* laciniæ 6, oblongæ, obtusæ, bracteolis lineari-oblongis. *Petala* late elliptico-spathulata, obtusa, glaberrima. *Ovaria* dense hirsuta, stylo curvato apice hamato terminata.

A little known and probably very rare plant. I have seen but one specimen, in Capt. King's collection, which I have compared with that in the Linnæan Herbarium; its general appearance resembles a small state of *G. Magellanicum*, but the leaves are densely velvetty on the surface and the flowers very different; Commerson says the latter are white, in which respect, as in their size, the form of the petals, &c., there is a close affinity with the *Sieversia? albiflora* (vol. i. p. 9. t. vii.), a plant which may possibly in an older state have hooked awns to the carpels, which these decidedly are. I am inclined to consider this the representative of the Auckland Island species, as the *G. Magellanicum* is of a similar New Zealand one. Though the descriptions of *G. involucratum* are very unsatisfactory, I have little doubt but that they refer to this plant as above described, which seems to have been first published in France and afterwards in England. The description of Smith being the fullest and his having adopted Commerson's own name induce me to retain that of *G. parviflorum*. In the flower I examined there were six divisions to the calyx.

3. RUBUS, *Linn.*

1. RUBUS *geoides*; Smith, *Icon. ined.* t. 19. *Hook. Icon. Plant.* t. 495. R. antarcticus, *Banks et Solander, MSS. et Icon. in Mus. Brit.* Dalibarda geoides, *Pers. Ench.* vol. ii. p. 58. *DC. Prodr.* vol. ii. p. 568. *Gaud. in Ann. Sc. Nat.* vol. iv. p. 106. *et in Freyc. Voy. Bot.* p. 138. *D'Urville, in Mém. Soc. Linn. Paris.* vol. iv. p. 620. Framboise, *Pernetty, Voy.* vol. ii. p. 58.

HAB. Strait of Magalhaens; *Commerson.* Port Famine; *Capt. King.* Good Success Bay; *Banks and Solander.* Falkland Islands; abundant on the hills.

There are few *Rosaceæ* in the temperate latitudes of the Southern Hemisphere. The genus *Rubus*, in particular, hardly exists in South America; a very remarkable circumstance, since Australia, New Zealand, and the Cape of Good Hope possess more species than extra-tropical South America, though those countries are more dis-

connected from the temperate regions of the North, in the case of Australia and New Zealand by water, and of the Cape by the deserts of Africa. This absence of *Rubi* is certainly an anomaly in the Chilian, Fuegian, and Patagonian Floras, which more fully represent in other genera common forms of European vegetation than do any other countries in the same latitudes.

This plant takes the place of *R. saxatilis* of the northern hemisphere and of *R. Gunnianus* of Tasmania. It is one of the few esculents of Fuegia and the Falkland Islands; the berries being almost as large as raspberries, of the colour of the Scottish cloudberry, *R. chamæmorus*, and with a very agreeable flavour.

4. FRAGARIA, *Tourn.*

1. Fragaria *Chilensis*; Ehr. *Beitz.* vol. vii. p. 26. *Lam. Dict.* vol. ii. p. 537. *DC. Prodr.* vol. ii. p. 571. *Hook. et Arn. in Bot. Miscell.* vol. iii. p. 305.

Hab. Chonos Archipelago; *C. Darwin, Esq.*

I have seen only one specimen, which is stunted and has a very large rhizoma. The species inhabits the west coast of North America attaining the parallel of 48°. The leaflets are frequently remote, and in an individual from the Saskatchawan river there is only a solitary leaflet to one of the petioles.

5. POTENTILLA, *Nestl.*

1. Potentilla *anserina*; Linn. *Sp. Pl.* 710. *DC. Prodr.* vol. ii. p. 588. *Engl. Bot.* t. 861.

Hab. Chonos Archipelago; *C. Darwin, Esq.*

A very widely diffused plant in the northern hemisphere, and perhaps not uncommon in the southern, being found both in Chiloe and Chili, though possibly introduced. It grows throughout Europe, from the shores of the Mediterranean to the Arctic Sea; over all Asia to the north of the Altai range; in North America from latitude 40° to Whale-fish Island in 70° north latitude, and from the Oregon River to Kotzebue's Sound on the west coast. It is frequent in Tasmania, but is not indigenous there.

6. ACÆNA, *Vahl.*

1. Acæna (Euacæna) *pumila*, Vahl; tota glaberrima, radice descendente, caule brevissimo simplici, foliolis parvis 10–12-jugis oblique ovatis obtusis grosse crenato-serratis valde coriaceis marginibus subrecurvis supra vernicosis subtus glaucis, pedunculo scapiformi, floribus parvis in spicam gracilem dispositis sessilibus, calyce elliptico aristis brevibus apice glochidiatis undique armato, petalis oblongis obtusis superne pilosis, staminibus 4 brevibus, stigmate depresso patelliformi marginibus fimbriatis. A. pumila, *Vahl, Enum.* vol. i. p. 298. *DC. Prod.* vol. ii. p. 593. Lasiocarpus humilis, *Banks et Sol. MSS. in Mus. Banks. cum icone.* (Tab. XIV.)

Hab. Strait of Magalhaens; *Commerson.* Port Famine; *Capt. King.* Good Success Bay; *Banks and Solander.* Hermite Island; *J. D. H.*

Radix 3-pollicaris, crassa, descendens. *Caulis* vix uncialis, vaginis castaneis foliorum tectus. *Folia* undique patentia, 3 unc. longa, petiolo basi vaginante; foliolis sub ½ unc. longis, supra luride viridescentibus sed nitentibus quasi vernicosis, impresso-lineatis, subtus pallidis venosis. *Scapus* gracilis, teres, erectus, foliis abbreviatis 2–3 auctus superne pubescens. *Spica* post anthesin uncialis, floribus remotis brevissime petiolatis basi bracteolatis; bracteolis lobatis. *Fructus* 1 lin. longus, luride fusco-purpureus. *Semen* compressum ut in congeneribus.

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Acaena pumila.

A most distinct and pretty little species, certainly belonging to the group *Euacæna*, though that, as now constituted, is very artificial. The present forms one of a small section in which the spike is truly elongated, the fruit compressed and covered with short glochidiate setæ, and which have a depressed stigma. To the same group belong *A. latebrosa*, Ait., *A. elongata*, Linn., *A. lappacea*, R. and P., and *A. myriophylla*, Lindl., with, amongst others, a new species from Monte Video*.

Plate XCV. *Fig.* 1, portion of peduncle, bracteola, and flower; *fig.* 2, stigma; *fig.* 3, ripe fruit cut open, showing the seed; *fig.* 4, embryo removed from the seed:—all *magnified*.

2. Acæna *cuneata*, Hook. et Arn.; argenteo-sericea, caule brevi? decumbente, foliolis 4–7-jugis oblique obovato-cuneatis superne grosse inciso-dentatis utrinque sericeis supremis basi supra petiolum deorsum productis, pedunculo scapiformi valido, floribus paucis majusculis remotis v. subgloboso-spicatis, petalis dorso sericeis, staminibus 2 filamentis subelongatis, stigmate depresso, fructibus obovatis tetragonis monospermis v. latioribus compressis et dispermis undique spinis apice glochidiatis basi dilatatis armatis. R. cuneata, *Hook. et Arn. in Bot. Miscell.* vol. iii. p. 307.

Hab. Strait of Magalhaens; Cape Gregory; *Capt. King*.

Caulis validus, 2–3-uncialis, ascendens. *Folia* 3–5 unc. longa, foliolis $\frac{1}{3}$–$\frac{1}{2}$ uncialibus. *Pedunculi* pedales, foliis paucis abbreviatis instructi. *Bracteolæ* lineares. *Flores* exemplaribus Chilensibus virides, Patagonicis lurido fusco-purpurei.

Capt. King's specimens exhibit ripe fruit only, whilst those from Chili, gathered by Bridges and Cuming, are in flower. The fruit is often formed of two carpels and then is compressed; the arming is different from that of the last species and consists of strong short spines, very broad at the base, sometimes arranged in rows, so as to give a pectinated appearance. Both in the form of the fruit and in the nature of the glochidiate spines, this is allied closely to *A. pinnatifida*, R. and P., and *A. trifida*, R. and P. The *A. cylindristachya*, R. and P., is figured by its describers as sometimes bearing two carpels; it is quite a distinct species, though nearly allied to a Carthagenian one, A. *macrorhiza*†, mihi.

3. Acæna (Ancistrum) *multifida*, Hook. fil.; tota pilis sparsis villosiuscula, caule gracili ascendente simplici v. superne pluries diviso, foliis linearibus, petiolis gracilibus, foliolis varie profunde sectis ad costam

* *A. Monte-Vidensis*, n. sp.; laxe villosa, pilis patentibus, foliolis oppositis alternisque 7–9-jugis lineari-oblongis inciso-pinnatifidis laciniis plurimis obtusis supra glabris subtus sericeis, pedunculo villoso folioso, spica interrupta elongata cylindracea obtusa, floribus parvis sessilibus, petalis glabriusculis, staminibus 2–4, stylis plerumque 2, stigmatibus depressis plumosis, fructibus late oblongis compressis undique setis brevibus apice glochidiatis armatis.

Hab. Monte Video; *Capt. King*.

Species satis distincta, tota pilis mollibus patulis fulvis vestita.

Radix basisque *caulis* desunt. *Folia* 4 unc. longa, foliolis $\frac{1}{4}$-uncialibus sessilibus. *Spica* 2 unc. longa. *Flores* sub 1 lin. longi, petalis fusco-rubris.

† *A. macrorhiza*, n. sp.; radice crassissimo descendente, caule subnullo, foliis lanceolatis, foliolis 15–20-jugis lineari-lanceolatis subacutis sessilibus basi oblique subcordatis serratis segmentis penicillatis supra pubescenti-pilosis subtus petiolisque pulcherrime argenteo-sericeis, pedunculis elongatis scapiformibus sericeis, spica florifera densa cylindracea obtusa, staminibus 4, stigmate depresso, fructibus oblongis tetragonis compressis glaberrimis spinis 4 inæquilongis armatis.

Hab. Carthagena; high mountains above St. Sebastian; *Purdie*.

A. cylindristachyæ habitu foliisque simillima, sed fructu diversissima.

usque pinnatifidis v. 3-5-partitis laciniis omnibus linearibus obtusis marginibus recurvis supra glaberrimis nitidis subtus sericeis, pedunculis villosis subscapiformibus parce foliosis, floribus plerisque in capitulum globosum congestis, calyce hirsuto, petalis fusco-purpureis dorso sericeis, staminibus 2 filamentis brevibus, stigmate depresso fimbriato, fructu tetragono glabriusculo supra medium spinis suberectis apice glochidiatis basi dilatatis armato.

HAB. Strait of Magalhaens; Port Gregory; *Capt. King.*

Radix lignosa, descendens. *Caules* 2–3-unciales, vaginis pilosis foliorum tecti. *Folia* 3–5 unc. longa, petiolis gracilibus subsericeis; foliolis perplurimis, magnitudine variis, 2 lin. ad ½ unc. longis. *Pedunculi* pedales, validi, erecti, foliis 2–3 abbreviatis instructi. *Flores* parvi.

This species is so nearly allied in general habit to some states of *A. pinnatifida*, that I hesitated before separating them. That plant I find to differ in having the surface of the fruit invariably armed with many and much larger spines. The *A. pinnatifida* also is a native of Patagonia, having been found by Mr. Darwin at Port Desire, in fruit only, and his specimens are of a much smaller size than those from Chili, but not otherwise distinct. The present species connects the *Euacæna* with the *Ancistrum* group, and is, too, the most nearly allied to the following, which, possessing no spines, setæ, or glochidiæ whatever, will not rank under either of those subgenera.

4. ACÆNA *lucida*, Vahl; laxe pilosa, caule elongato decumbente ramoso, ramis plurimis ascendentibus foliosis, foliolis parvis 5–9-partitis laciniis inæqualibus lineari-oblongis obtusis marginibus revolutis supra glaberrimis subtus laxe patentim pilosis uninerviis, pedunculis scapiformibus breviusculis validis, floribus plerisque in capitulum globosum aggregatis paucis solitariis fasciculatisve, bracteolis scariosis ciliatis, petalis dorso barbatis, staminibus plerumque 2 filamentis brevibus, stigmate depresso patelliformi, fructu tetragono ad angulos superne tuberculato, spinis glochidiisve nullis. A. lucida, *Vahl, Enum.* vol. i. p. 296. *Lamarck, Illust.* vol. i. t. 22. f. 3. *Encycl.* vol. i. p. 346. *Hort. Kew.* vol. i. p. 67. *DC. Prodr.* vol. ii. p. 593. (TAB. XCIV.)

HAB. Falkland Islands; very abundant on rocks near the sea.

Caules elongati, 6 unc. ad pedalem, prostrati, curvati, crassitie pennæ anserinæ, vestigiis petiolorum delapsorum vaginati, apicibus ascendentibus. *Folia* ad apices ramorum conferta, 1–2-pollicaria; petioli basi late vaginantes, vaginæ margine ciliata; foliola pro genere minima, 1 lin. longa, pallide viridia, ad basin in lacinias 3–4 fissa, plus minusve patentim pubescentia, apicibus interdum penicillatis. *Pedunculi* 3 unc. longi. *Capitula* villosa, ½ unc. diametro. *Flores* 1 lin. longi. *Fructus* obovatus, sursum pilosus, angulis prominentibus.

A plant long known in cultivation in England, but very imperfectly described. I am not aware by whom it was first detected. Vahl describes it from a specimen in the Jussieuan herbarium, and states that he saw it growing in Dr. Pitcairn's garden near London, where the fruit was unarmed; this is always the case in native specimens, though Vahl asserts the contrary. It is not improbable that some of the varieties of *A. trifida*, from Patagonia, may have been mistaken for this.

PLATE XCIV. *Fig.* 1, bracteola; *fig.* 2, flower; *fig.* 3, the same, more advanced; *fig.* 4, longitudinal section of the same, showing the carpel, enclosed in the calyx; *fig.* 5, section of ripe fruit and carpel, showing the suspended seed; *fig.* 6, side, and *fig.* 7, front view of seed; *fig.* 8, embryo removed from seed:—all *magnified*.

5. ACÆNA (Ancistrum) *lævigata*, Ait.; glabriuscula, caule decumbente ramoso, ramis ascendentibus foliosis, foliolis suboppositis oblongo-obovatis obtusis basi obliquis superne grosse crenato-dentatis coriaceis supra glaberrimis subtus parce pilosis, pedunculo scapiformi glaberrimo v. pubescente nudo v. basi folioso superne interdum diviso, floribus plerisque capitatis, calycibus glabris, staminibus 2 filamentis brevibus antheris ro-

Acæna lucida Vahl.

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tundatis, stigmate brevi dilatato fimbriato, fructu glaberrimo oblongo-cuneiforme compresso spinis 4 suberectis inæquilongis armato. A. lævigata, *Hort. Kew.* vol. i. p. 68. *DC. Prodr.* vol. ii. p. 592. A. Magellanica, *Hook. et Arn. in Bot. Miscell.* vol. iii. p. 308, *quoad exemplaria hortensia.* A. Magellanica, β, *Lamk. quoad Herb. Mus. Brit.*

Hab. Strait of Magalhaens; *Commerson.* Hermite Island; *J. D. H.* Falkland Islands; *Dr. Lyall, Mr. Chartres, J. D. H.*

Species *A. ascendenti* habitu simillima, sed glabrior, foliis coriaceis, formaque stigmatis staminum fructusque diversissima.

A species so closely resembling *A. ascendens* that, even in their native place, the Falkland Islands, where both grow together, it is difficult to discriminate them without examination, when the present may be distinguished particularly by the more coriaceous and less hairy leaflets, the spikes more elongated, and bearing remote glomeruli of flowers, or sometimes branching, by the smooth calyx, broader and shorter stigma, and the form of the ripe fruit. This, with all the preceding species, and the following, differ in the form of the stigma from the remainder, in which that organ is much more elongated, and in which there is less tendency in the peduncles to bear flowers anywhere but at the apex.

6. Acæna *Magellanica*, Vahl; abortu dioica?, caule brevissimo subramoso ascendente, foliis subcoriaceis parce pilosis subtus subsericeis, foliolis 3–7-jugis late obovato-oblongis obtusis sessilibus superioribus decurrentibus grosse et obtuse crenato-serratis interdum 3–5-fidis, pedicello scapiformi nudo v. rarius unifoliato pubescente, capitula parva post anthesin dilatata, calyce petalisque late oblongo-ovatis pilosis, staminibus elongatis filamentis gracilibus, antheris majusculis didymis, stylo subelongato latiusculo plumoso. A. Magellanica, *Vahl, Enum.* vol. i. p. 207. (*non Hook. et Arn. in Bot. Miscell.*). *Lam. Illust.* t. 22. f. 2. *Suppl.* vol. i. p. 346. *DC. Prodr.* vol. ii. p. 593.

Hab. Strait of Magalhaens; *Commerson.* Cape Gregory, *Capt. King.*

Very nearly allied to *A. lævigata*, and perhaps not specifically distinct; the capitula are smaller and never divided, the styles rather longer, the peduncles more hairy, and the whole plant less branched than in that species. The hairy peduncles and broad styles at once distinguish this from *A. ascendens.*

7. Acæna (Ancistrum) *ovalifolia*, R. et P.; sericeo-pubescens, caule longe repente ramoso, ramis suberectis foliosis, foliolis 3–4-jugis ovali-oblongis obtusis ad basin usque crenato-serratis supra glabriusculis subtus hirsutis sericeisve, pedunculis scapiformibus pubescentibus fere nudis, capitulis globosis, floribus minimis, calyce pilis elongatis subrigidis dense obtecto, petalis obovato-spathulatis dorso sericeis, staminibus plerumque 2 filamentis gracilibus, antheris parvis didymis, stylo gracili, stigmate elongato unilaterali plumoso, fructibus villosis setis 2–3 rarius 4 gracilibus apice glochidiatis armato. A. ovalifolia, *Ruiz et Pavon, Fl. Peruv.* vol. i. p. 67. t. 103. f. *c. Vahl, Enum.* vol. i. p. 295. *DC. Prodr.* vol. ii. p. 592. Ancistrum repens, *Ventenat, Hort. Cels.* t. 5. *Lam. Encycl. Méth.* vol. i. p. 345.

Hab. South Chili, and throughout Fuegia; *Banks and Solander, &c.*

Ab *A. ascendente*, cui proxima, differt floribus parvis, calycibus dense vestitis, antheris minimis didymis, setis fructus duobus tribusve, et foliolis omnibus oblongis regulariter crenato-serratis.

Nearly allied to *A. ascendens*, but in the flower and fruit totally distinct, as I have proved from the examination of many specimens, gathered at various positions between the Equator itself, where it inhabits a level of 12,000 feet, and Cape Horn.

Difficult of determination as the *Acænæ* at first sight appear, I feel quite satisfied that they are possessed of ample though overlooked specific characters. The present species has more fully convinced me of this than any of

the former, its range being far wider and it being further closely allied to three or four Chilian congeners. I have diligently compared Professor Jameson's specimens both in flower and fruit, gathered on Pichincha, with those of Capt. King from Port Famine in an equally good state, without being enabled to detect even the differences of a variety in the foliage or inflorescence of either. The oblong form of the leaflets similar at both extremities and regularly serrated along the whole margin is characteristic, but far more so is the calyx, densely clothed with stiff straight hairs, the slender filament, and small didymous anther; also the villous fruit, with generally two slender aristæ. The figure in Venteuat's 'Hortus Celsianus' is excellent.

8. Acæna (Ancistrum) *ascendens*, Vahl; caule elongato prostrato ramoso, ramis glaberrimis ascendentibus foliosis, foliis plus minusve pilosis, foliolis 4–7-jugis submembranaceis obovato-oblongis obtusis grosse serratis superioribus sæpe decurrentibus, pedunculo scapiformi basi folioso plerumque glaberrimo superne longo nudo v. rarissime folio unico glomeruloque florum aucto, capitulo globoso, bracteolis linearibus apice ciliatis, calyce glabriusculo, petalis late ovali-oblongis dorso apiceque pilosis, staminibus plerumque 4 petalis longioribus, stigmate elongato unilateraliter et breviter plumoso, fructu obconico aristis 4 elongatis apice glochidiatis. A. ascendens, *Vahl, Enum.* vol. i. p. 297. *Lam. Suppl.* vol. i. p. 347. *DC. Prodr.* vol. ii. p. 593. (*non Hook. et Arn. in Bot. Miscell.* vol. iii. p. 308). Ancistrum humile, *Pers. Ench.* vol. i. p. 30. A. lævigatum, *Lag. Spec.* vol. vii. *quoad DC.* l. c. A. Magellanicum, *β. Lamarck, Illust.* vol. i. p. 76. (Tab. XCVI.)

Var. *β*; foliis minoribus subcoriaceis, caulibus strictioribus.

Hab. Strait of Magalhaens; *Commerson, Thouin.* Good Success Bay; *C. Darwin, Esq.* Falkland Islands, abundant; *Gaudichaud, D'Urville*, &c. South Georgia; *Forster.* Var. *β*, Cape Fairweather; *Capt. King.*

Caules elongati, plerumque 3–5 unc. longi, prostrati, ramosi. *Folia* nisi in var. *β*, flaccida, utrinque sed subtus præcipue pilosa. *Scapi* glaberrimi, rarissime sparse pilosi. *Capitula* magnitudine varia, floribus semper? hermaphroditis. *Calyx* petalaque dorso parce pilosa. *Stamina* conspicua; filamentis elongatis, gracilibus; antheris globosis.

The chief points of distinction between this and the *A. lævigata* will be found in the notes upon that species. The present is the more common plant of the two in the Falkland Islands.

Plate XCVI. *Fig.* 1, flower and bractea; *fig.* 2, petal; *fig.* 3, stamen; *fig.* 4, calyx and stigma; *fig.* 5, capitulum of fruit:—all *magnified.*

9. Acæna *affinis*, Hook. fil.; caule prostrato radicante ramoso, ramis ascendentibus foliosis, foliis utrinque plus minusve pilosis foliolis, 5–7-jugis subflaccidis obovato-oblongis obtusis grosse serratis basi subdecurrentibus v. in petiolum brevissimum attenuatis, pedunculo scapiformi glaberrimo, capitulo globoso, floribus hermaphroditis, calyce glabriusculo 4-aristato inter aristas attenuato et in lobis uncinato-recurvis producto, petalis elliptico-oblongis dorso apiceque ciliatis, filamentis brevissimis, antheris parvis inclusis didymis, stylo elongato plumoso, fructu elongato, aristis elongatis. Sphærula, *Anderson MSS. in Bibl. Banks.* Ancistrum inerme, *Herb. Banks.* (Tab. XCVI. B.)

Hab. Kerguelen's Land; marshy places near the sea, abundant; *Mr. Anderson*, in Cook's third voyage, *J. D. H.* and *Dr. Lyall.*

A. ascendenti statura habitu formaque foliorum inflorescentiæque simillima, sed petala angustiora, stamina multo minora, filamenta brevissima inclusa, formaque calycis supra aristas diversa.

A plant so very similar to *A. ascendens* that I long considered it to be a variety peculiar to the remote locality it inhabits. Though the characters I have used to distinguish them are minute, they are very important. Besides

Acæna ascendens, Vahl.

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the narrowness of the fruit, the calyx is attenuated between the aristæ, and the mouth of its tube generally terminates in four recurved points; the petals are longer and narrower and the stamens very small, with filaments even shorter than the anthers; the latter were invariably full of pollen and quite perfect.

PLATE XCVI. B. *Fig.* 1, a flower; *fig.* 2, stamen; *fig.* 3, longitudinal section of flower, after the petals have fallen away; *fig.* 4, carpel, removed from the tube of the calyx: all *magnified*;—*fig.* 5, head of mature fruit: of the *natural size*.

10. ACÆNA *Antarctica*, Hook. fil.; pumila, caulibus brevibus robustis prostratis ascendentibus parce ramosis, foliis confertis foliolis 3–4 late oblongis obtuse serratis medio canaliculatis supra dense pilis fulvis sericeo-villosis subcoriaceis infra pilosis, pedunculo scapiformi, capitulo —?

HAB. Fuegia, Staten Land; *A. Menzies, Esq.* Hermite Island, Cape Horn; on the mountains, rare, 1000 feet.

Caulis 2–3-uncialis, vaginis membranaceis glaberrimis foliorum tectus. *Folia* vix uncialia, petiolo gracili appresse sericeo. *Foliola* sub ¼ unc. longa, dorso carinata, marginibus recurvis.

I have not met with this small and very distinct species either in flower or fruit, nor does it exist in any other collection of Fuegian plants than my own and that of the late Mr. Menzies.

Below * are descriptions of two additional *Acænæ*, which, with the above and four others in De Candolle's Prodromus, include all the South American plants of this genus, known to me.

XIV. ONAGRARIÆ, *Juss.*

1. FUCHSIA, *Plum.*

1. FUCHSIA *coccinea*, Ait. *Hort. Kew.* v. ii. p. 352.

Var. α, *robustior*, foliis summis sessilibus, petiolis omnibus brevioribus. F. coccinea, *Ait.* l. c. *Curt. Bot. Mag.* t. 96. *Willd. in Uster Annal.* pt. 3. p. 37. t. 6. *DC. Prodr.* vol. iii. p. 38, *in part.* F. Magellanica, *Lamk. Encycl.* vol. ii. p. 565. *Illust. Gen.* t. 282. Thilco, *Feuill. Obs.* vol. iii. p. 6. t. 47.

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* A. *macrostemon*, n. sp.; caule simpliciusculo ascendente folioso, foliis elongatis utrinque sericeo-pilosis subcoriaceis, foliolis 5–7-jugis plerisque sessilibus decurrentibus grosse et subacute crenato-dentatis, pedunculo elongato sparse piloso, capitulo majusculo globoso, calycibus pilosis, petalis oblongo-obovatis dorso margineque sericeo-villosis, filamentis gracilibus elongatis, antheris maximis oblongis, stylo elongato breviter plumoso, calycis aristis 2 cæteris duplo longioribus, fructibus breviter obconicis. A. ascendens, *Hook. et Arn. in Bot. Miscell.* vol. iii. p. 307.

HAB. Cordillera of Chili; *Cuming, Bridges.* Mendoza; *Gillies.* Port Desire; *Darwin.*

Caulis pedalis. *Folia* 4–6 unc. longa. *Pedunculi* spithamæi. *Antheræ* bis terve majores quam in congeneribus.

A. *Cadilla*, n. sp.; caule prostrato ramoso, ramis ascendentibus petiolisque patentim pilosis villosiusculis, foliis membranaceis subsericeo-pilosis foliolis late obovato-oblongis obtusis grosse et subacute inciso-serratis laciniis angustatis, pedunculo scapiformi, capitulo globoso, calycibus dense setoso-pilosis, petalis dorso subvillosis, staminibus 2 filamentis gracillimis antheris parvis, fructu obconico elongato parce villoso setis 4 divaricatis elongatis filiformibus terminato, stylo breviusculo gracili sublonge plumoso.—Nom. vernac. "Cadilla."—A. Magellanica, *Hook. et Arn. in Bot. Miscell.* vol. iii. p. 308, *in part.*

HAB. South Chili, Province of Maule; *Cuming*: fields near Valdivia; *Bridges.*

Capitula post anthesin majora et aristæ fructus longiores quam in congeneribus. *Rami* pilis sericeis patentibus villosiusculi. *Folia* argute incisa.

Var. β, *macrostema*, R. et P.; gracilis, foliis omnibus petiolatis, petiolis gracilibus. F. macrostema, *Ruiz et Pavon, Fl. Per.* vol. iii. p. 88. t. 324. f. *b*. *Hook. et Arn. in Bot. Miscell.* vol. iii. p. 308. *DC. Prodr.* vol. iii. p. 37. *Lodd. Bot. Cab.* t. 1062. F. discolor, *Lindl. Bot. Reg.* t. 1805. *Hook. Bot. Mag.* t. 3498. F. gracilis, *Lindl. Bot. Reg.* t. 347 et, var. β, 1052. *DC. Prodr.* vol. iii. p. 37. F. decussata, *Graham in Edinb. Phil. Journ.* vol. i. p. 401. *Hook. Bot. Mag.* t. 2507. *non Ruiz et Pavon.*

Hab. Fuegia and South Chili. Var. α, mountain woods in the Strait of Magalhaens; *Commerson.* Var. β, Good Success Bay, *Banks and Solander*; Port Famine, *Capt. King*; Fuegia, *C. Darwin, Esq.*; Staten Island, *Mr. Webster.*

The commoner forms of Chilian *Fuchsia* are certainly referable to the *F. macrostema* of R. and P. (as suggested by Dr. Lindley under *F. discolor*); it is the most abundant South American variety, growing from the latitude of Valparaiso to that of Fuegia, and is also now the general garden-plant in the neighbourhood of London. Of the original *F. coccinea*, Ait., on the other hand, I have never seen wild specimens; it is probably rare in its native country, and though introduced into England so long ago as 1788, by Capt. Firth, and universally cultivated for many succeeding years, it has quite given place to the more graceful and paler-flowered variety. The comparative length of the petioles appears to afford a very sufficient character of the two states; they are short in the garden specimens of var. α, *robustior*, and in Feuillé's, Unger's, Lamarck's, and Curtis's plates of *F. coccinea*; but longer and slender in all the native samples of var. β, and in the published figures of *F. macrostema*.

While the climate of Fuegia bore the character of being among the most rigorous in the world, its vegetation was quoted as presenting a truly singular anomaly, because there, *Fuchsias* and the *Veronica decussata*, accompanying other half-hardy and greenhouse plants, flourish in the open air. Now, however, it is well understood that the climate is inclement and not rigorous; and boisterous and cold summers not being necessarily the indices of proportionably severe winters, the fact is no longer doubted, or even wondered at. The difference between the climates of Great Britain and Fuegia is only an exaggeration of what exists between the east and west coasts of England and Scotland, or still more remarkably between Suffolk and Devonshire.

2. EPILOBIUM, *L.*

1. Epilobium *tetragonum*, Linn.; *Sp. Pl.* 494. *Engl. Bot. t.* 1948.

Var. β, *Antarcticum*; caule ascendente basi sæpius procumbente ad angulos pubescente, foliis latioribus crassioribusque.

Hab. Tierra del Fuego; *C. Darwin, Esq.* Falkland Islands; *Mr. Chartres, J. D. H.* Var. β, Port Famine; *Capt. King.*

The species of *Epilobium* inhabiting the southern hemisphere are equally variable as those of the opposite one, appearing indeed quite inextricable. Some are undoubtedly allied to the plants of Europe, so that no description can be framed by which they may be recognized, whilst others differ in what are confessedly unimportant and fallacious characters.

What is here considered the *E. tetragonum* of Europe, has been the subject of repeated and most attentive examinations by Mr. Watson and myself, without enabling us to detect any appreciable difference between it and the copious suites of European, Asiatic, and North American specimens, with which it was compared. Capt. King's plant, referred to a variety of it, is smaller and nearer *E. alpinum* of the northern regions, or *E. confertifolium* of Lord Auckland's group; its stems are simple and prostrate below, the leaves oblong and obtuse. The stigmas of all the states are clavate and blunt.

After examining the species of *Epilobium* which inhabit the Cordillera between Chili and North America, I find, in all latitudes, states of one plant, which seems to prevail throughout the American continent from Canada to

Fuegia, and which I have little hesitation in referring to *E. tetragonum*, whilst varieties of it also occur, very similar to other European species. The Falkland Island plant is certainly a native of the Andes of Chili, specimens from whence have been described under the name of *E. pedicellare* by Presl, and *E. denticulatum* by Ruiz and Pavon. The same locality affords *E. alpinum*, of the Botanical Miscellany (vol. iii. p. 309.), which I can neither distinguish from the British nor from a Tasmanian plant, and which is possibly a state of the Port Famine variety: in the latter locality the *E. alpinum*, if it be that species, assumes a much larger and wholly different appearance. The *E. Bonplandianum*, H. B. K. of Peru (in Herb. Hook.), seems only a very slight variety of *E. tetragonum*, allied to the *E. alsinifolium* of the Scottish Alps, whose claims to specific distinction have been doubted. From the Andes of Colombia Professor Jameson has sent a specimen quite similar to Capt. King's from Port Famine. The Chilian *E. tetragonum* grows abundantly on the mountains of Mexico, and is the *E. Bonplandianum* of Galeotti (n. 3018, 3028, and 3050), and also apparently the *E. Mexicanum* of Linden (n. 638.). Further north, in America, the true *E. tetragonum* is very common on the mountains of Carolina and the southern states, and probably throughout the low grounds of the same latitudes, under the name of *E. coloratum*, Muhl.; in the British possessions it is seen as far north as Lat. 64°.

E. confertifolium, though very dissimilar in general appearance from *E. tetragonum*, is not so in reality. Mr. Watson remarks of it, that a more luxuriant growth of the stem, increasing the distance between the leaves, would bring it almost to Capt. King's specimens, and that gentleman has also cultivated Scottish plants of *E. alpinum*, hardly distinguishable from *E. confertifolium*. The latter, he adds, holds the same position between the Port Famine and the British *E. tetragonum*, that *E. origanifolium* does in Europe between *E. alpinum* and *E. tetragonum*. When such parallel cases of difficulty occur in opposite hemispheres, and in a genus, some of whose species are common to and equally variable in both countries, and when it is further remembered that *E. alpinum* and *E. tetragonum*, with many intermediate states, are seen in Tasmania, we may well ask whether there really exist any limits between these and some other supposed species of this intricate genus.

Few persons, accustomed to the study of the British, or even the European *Epilobia*, are aware of the difficulty of recognizing certain aspects of the well-known species in Asia and America, and still less of the gradations that connect, in the southern regions, what appear abundantly distinct in the northern. We are too apt to assume the well-marked form of a plant, occurring within the narrow sphere of our own researches, as the standard for that species; neglecting the obvious truth, that the limits within which any organized production may vary, are more confined in one locality than in another. Before a native of so narrow an area as Great Britain can be pronounced a species, it must be known under all the phases it assumes in every other part of the globe it inhabits, and its most closely allied congeners should be carefully studied. This remark applies particularly to the *Epilobia*, which are equally abundant in the southern quarters of the globe and in the northern, and some of whose species are alike common and variable in both.

XV. HALORAGEÆ, *Br.*

1. MYRIOPHYLLUM, *Vaill.*

1. Myriophyllum *elatinoides*, Gaud.; monoicum v. dioicum, foliis 3–5-natim verticillatis inferioribus capillacco-multifidis superioribus brevioribus lanceolatis ovatis v. late oblongis interdum oppositis integerrimis dentatis pinnatifidisve, floribus 8-andris, carpellis breviusculis late oblongis dorso convexis glaberrimis. M. elatinoides, *Gaud. in Ann. Sc. Nat.* vol. v. p. 105. *et in Freyc. Voy. Bot.* p. 480. *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 618. *DC. Prodr.* vol. iii. p. 68. M. ternatum, *Gaud., D'Urv. et DC.* l. c. *Hook. et Arn. Bot. Miscell.* vol. iii. p. 314.

Hab. Falkland Islands; in fresh-water lagoons and running streams, abundant; *Gaudichaud, D'Urville* and *J.D.H.*

It is very difficult to decide upon the limits of species in this genus, which, like most aquatic plants, is sufficiently Protean. My own specimens are barren, but those of Dr. Gillies and Bridges, from the Andes and west coast of South America, are in flower and monœcious, and from them I have described the ripe carpels. Gaudichaud distinguishes *M. elatinoides* from *M. ternatum*, by the former being dioecious; but D'Urville, in re-describing it, asserts the contrary.

In its normal state, the upper leaves of the present species are much broader than those of any other; but at times, the whole foliage is uniformly capillaceo-multifid, when it can hardly be discriminated from some forms of the European *M. verticillatum*.

2. HIPPURIS, *L.*

1. Hippuris *vulgaris*, Linn. *Sp. Pl.* 3. *Engl. Bot.* t. 763.

Hab. Strait of Magalhaens; Port Famine, *Capt. King*.

These specimens, which are barren, do not seem to differ from others of European growth. Both Capt. King's and Mr. Anderson's collections contain the plant, so that although the above be the only reported station for it in the southern hemisphere, I have no reason to doubt its authenticity. The range of *Hippuris vulgaris*, in the temperate latitudes of the northern parts of the world, is very wide, extending from the arctic regions of Europe and Asia (Lapland 70°, Iceland 65°, Siberia and Kamschatka), south to Montpellier, lat. 43° in western Europe; probably reaching 50° in the central, and the Caucasus, or 44° in the east parts of our continent. The late Dr. Griffith collected it in Affghanistan, lat. 32°, its only known habitat in Central Asia. In North America this species is equally diffused, from the latitudes of 55° and 70° on the west coast, and from New York, 41°, to Labrador and Greenland, lat. 70°, on the east. From the interior I have only seen specimens, gathered by Dr. Richardson near Hudson's Bay, between 55° and 60°.

Hippuris is very closely allied to *Myriophyllum*, and differs chiefly in the reduction of the four carpels to a solitary one, with an accompanying solitary stamen, placed on one side of the carpel, within the obsolete margin of the calyx.

3. CALLITRICHE, *L.*

1. Callitriche *verna*, L., *vid. Fl. Antarct.* part i. p. 11. Anthapla, *W. Anderson in Bibl. Banks.*

Var. β, *terrestris*; Fl. Antarct. l. c.

Hab. Fuegia, the Falkland Islands, and Kerguelen's Land, abundant; *Anderson* (in Cook's 3rd Voyage), *J. D. H.* Var. β, Hermite Island and the Falkland Islands.

Callitriche differs from the typical genera of the Order *Halorageæ* in having generally caducous bracts at the base of the flowers, in its 4-carpellary ovarium with only two styles, in the entire absence of a limb to the calyx, of a corolla in the female, or of any perianth whatever in the male flower. The latter are truly achlamydeous, but not the former, the calyx being equally obsolete in the carpels of *Myriophyllum* and in the present genus; whilst the general symmetry of the parts, the structure of the seed and embryo, of the recurved styles, covered uniformly with stigmatic papillæ, and the form of the pollen, are alike in both, indicating a very close natural affinity. In the first part of this work, I alluded to the real form of the anthers in the southern specimens of *C. verna*, as not differing from the ordinary structure of that organ in Phænogamic plants, even in appearance, before their dehiscence, and only presenting the hippocrepiform suture on the curling up of the valves, and the union of the two loculi and their lines of dehiscence above.

Callitriche verna is universally diffused throughout the temperate regions of both hemispheres, even entering

the tropics in the East Indies, and skirting the Arctic circle both in Europe, Asia, and America. In the south, besides inhabiting all the Antarctic Islands, it grows in New Zealand and Tasmania.

4. GUNNERA, *L.*

1. Gunnera *Chilensis*, Lamk., *Enc. Méth.* vol. iii. p. 61. *Illust.* t. 801. f. 1. *Brown et Bennett, Plant. Jav. Rar.* pt. 1. p. 70. G. scabra, *Ruiz et Pav. Fl. Peruv.* vol. i. p. 29. t. 44. f. *a. Kunth Nov. Gen. An.* vol. ii. p. 85. "Panke," *Feuill. Obs.* ii. p. 741. t. 30.

Hab. Chonos Archipelago; *C. Darwin, Esq.*

Apparently the southern limit of a plant which is found along the whole eastern side of South America, from Caraccas, in lat. 10° N., whence we have specimens gathered by Mr. Purdie, as far south as the 46th degree.

After the elaborate and learned essay upon this genus by Mr. Bennett, in the 'Plantæ rariores Javæ,' I have little to remark upon its history or structure, except that the embryo is very minute, heart-shaped, and placed at the opposite extremity of the seed from the hilum, towards which the cotyledons point. The albumen is surrounded with a delicate testa and attached by a very short funiculus to the osseous putamen, which (as Mr. Bennett rightly concludes) is derived from the inner coat of the ovarium, and not, as Blume supposes, from the outer coat of the seed.

Some years ago, after referring a Tasmanian genus to *Haloragea*, Mr. Brown had the kindness to direct my attention to *Gunnera*, a plant closely allied to the one I was then examining; this led to the remark contained under the description of *Milligania* in the 'Icones Plantarum' (t. cccxix.) and the latter, probably, to Endlicher's removal of *Gunnera* from *Urticeæ*. The correctness of this view of their affinity admits of no doubt, although the alternate leaves separate *Gunnera* from all the genera of this order known to me.

The more obvious points of affinity between *Gunnera* and the *Haloragæ* proper, are the frequently unisexual flowers, the quaternary arrangement of their parts, the adherent tube of the calyx, the great similarity between the two petals of *Gunnera* and *Meionectes*, the form of the stamina and pollen-grains, the styles covered throughout their length with stigmatic papillæ, and the solitary pendulous albuminous seed. I may add the rigid and more or less scabrid foliage, which is so conspicuous in *Haloragis*, the racemed and often pendulous flowers, and the frequently long recurved styles.

The *Gunneræ* differ remarkably in having their leaves, as I mentioned above, alternate; the ovaria, though furnished with two styles, are one-celled, with a solitary ovule; and the embryo, instead of being cylindrical and axile, is very minute and placed at the opposite extremity of the seed from the hilum, and it is also inverted, with the radicle turned away from the hilum. The stamens in *Gunnera* are opposite the petals, and so are two of those of *Meionectes*. There is a tendency to irregularity in the form of the ovarium and its investing calyx, observable in some of the plants of this group, and most evident in the following species and in *Milligania*, where four unequal teeth of the calyx are developed, this and the presence of two styles indicate that the ovarium is probably two-celled at a very early period, one of which cells is suppressed. Lastly, in *Milligania*, a more intimate affinity is observable between *Gunneræ* and *Haloragea*, for there are frequently in that genus four evident styles united at the base into two, indicating a normally four-celled ovarium, or one formed of four carpellary leaves, placed like those of *Callitriche*, in pairs, but so intimately united as to appear more like the truly simple ovary of *Hippuris*.

Next to *Haloragea*, *Chloranthæ* is the order with which this genus has most in common, particularly through the Sandwich Island genus *Ascarina*, of Forster, where the flowers are spiked or racemed and unisexual, the male consisting of a solitary linear anther, sessile in the axil of a toothed bractea, and the female, when ripe, of a one-celled drupe, very like that of *Gunnera*, surmounted by a sessile obscurely 3-lobed stigma. The seed is compressed, pendulous from the apex of the cell, covered with a delicate membranous testa; the albumen copious and oily,

containing a very minute embryo, whose precise form and direction I have not been able to trace, and the endocarp is often loose within the sarcocarp, externally covered with bullate opaque glands, which are sometimes seen under the cuticle of the anther and in other parts of the plant. In the shrubby habit, articulated stems, and in the opposite glabrous leaves, *Ascarina* differs very conspicuously from *Gunnera*.

Datiscæ is another order with which *Gunnera* coincides in many important points, as in the often tetramerous structure of the flowers, their unisexual nature, the absence of a corolla, the form of the stamens, which are in *Datisca* attached to the laciniæ of the calyx, while these laciniæ, in *Gunnera*, appear like adnate bracteas, in the absence even of rudiments of an ovarium in the male flower, especially in there being two styles to each carpel, in the albuminous seed and erect embryo, which is of a different shape and form from that of *Gunneræ*, though similar to that of *Haloragee* proper. On the other hand, *Datisca* differs from this in many respects, most remarkably in the many ovuled parietal placentæ, in the form of the pollen, in the composition of the carpels and their dehiscence, and in the form of the seed and testa, which approaches to that of some *Saxifrageæ*.

In its native state, *Gunnera scabra* must be a very noble plant, its foliage being amongst the largest of Dicotyledonous vegetables. Mr. Darwin * mentions having measured single leaves eight feet in diameter, or no less than twenty-four feet in circumference. The stalks are more than a yard high and each bears four or five of these enormous leaves. I have no specimens from this locality, but introduce the plant on the authority of Mr. Darwin's Journal, where it is stated that "the 'Panke' inhabits sand-stone cliffs, and somewhat resembles Rhubarb on a gigantic scale. The inhabitants cut the stalks, which are subacid, tan leather from the roots, and procure a black dye from it."

2. GUNNERA (Misandra) *Magellanica*, Lamk. *Dict.* vol. iii. p. 61. t. 801. f. 2. G. Falklandica, *Hook. Ic. Plant.* t. 489. Misandra Magellanica, *Commerson in Jussieu Gen.* 405. *Gaud. in Ann. Sc. Nat.* vol. v. p. 89. *Freyc. Voy. Bot.* p. 502. *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 621. Dysemone integrifolia, *Banks et Sol. MSS. in Mus. Banks cum icone.* "Mauve," *Pernetty Voy.* vol. ii. p. 58.

HAB. South Chili, Fuegia and the Falkland Islands, very abundant; *Commerson, Banks and Solander, Capt. King*, and all subsequent voyagers.

I find in Fuegia the same variety, or rather state of this plant; which is called *Falklandica* in the 'Icones Plantarum,' and I have introduced that name as a synonyme.

The *Misandræ* have been separated from the true *Gunneræ* by their dioecious flowers being destitute of a corolla, to which might be added their humble mode of growth, and male flowers consisting of a solitary stamen bracteolated at the base and collected into a dense panicle or arranged in a spike. The characters drawn from the inflorescence, are not however decisive; one New Zealand species, *Gunnera monoica*, Raoul, is monœcious, and a second, *G. prorepens*, mihi, has petals. Generally speaking, *Misandra* is the more southern representative of *Gunnera* proper. Thus, whilst Java has *G. macrophylla*, Blume, Tasmania possesses *Milliganii*; Otaheite *G. petaloidea*, Gaud., while New Zealand (whose flora partakes of that of the Pacific Islands), has three species of *Misandra*; and lastly, Peru, Chili, and Juan Fernandez, have *G. Chilensis* and *G. bracteata*, and Fuegia, *M. Magellanica* and *M. lobata*.

G. Magellanica is one of the most abundant of Antarctic American plants, from Valdivia to Cape Horn, and especially in the Falkland Islands, where it is eaten by cattle. On the mountains near Cape Horn it ascends to 1,000 feet. Apparently the same species, without flower, has been collected by Professor Jameson on the Andes of Quito.

3. GUNNERA (Misandra) *lobata*, Hook. fil.; dioica, caule repente radicante, petiolis rufo-pilosis, foliis rotundatis profunde 5–7 lobis coriaceis nervis subtus pilosis lobis rotundatis obtusis integerrimis marginibus

* Journal, ed. i. p. 340.

obscure ciliatis, staminibus spicato-racemosis; antheris late oblongis. Dysemone lobata, *Banks et Solander, MSS. in Mus. Banks cum icone.*

Hab. Fuegia; Good Success Harbour, *Banks and Solander*; Hermite Island, Cape Horn, *J. D. H.*

Caules simpliciusculi, elongati, 3–6 unc. longi, validi, crassitie pennæ corvinæ, glaberrimi, subangulati, fibras plurimas crassas valde elongatas emittentes, versus apicem reliquiis squamosis stipularum vetustarum obtecti. *Petioli* ½–1 unc. longi, pilis rufis subscariosis tecti, basi in stipulam vaginantem dilatati. *Lamina* ½–¾ unc. lata, viridis, subtus pallidior. *Pedunculus* exemplaro masculo ½ unc. longus, racemum parvum staminum gerens. *Antheræ* luteæ.

My specimens were gathered upon the mountains near Cape Horn, in early spring, and are imperfect. I possess only a portion of a male spike of inflorescence, and borne upon a very stunted plant; the bracteæ are probably caducous, they subtend the filaments and in *G. Magellanica* may often be seen placed, one on either side of a contiguous pair of stamens; properly speaking, they are segments of a rudimentary calyx.

XVI. MYRTACEÆ, *Br.*

1. METROSIDEROS, *Br.*

1. Metrosideros *stipularis*, Hook. fil.; glaberrima, ramis ramulosis acute tetragonis foliosis, foliis parvis breviter petiolatis distichis ellipticis ovatisve subacutis grosse pellucido-punctatis nervis subparallelis basi glandulis inflatis quasi stipulatis, pedunculis folio brevioribus 1–3-floris, calyce 5-dentato glaberrimo dentibus erectis breviter ovatis obtusis, staminibus petalis ter longioribus, capsula obovata-turbinata coriacea 3-loculari, seminibus plurimis linearibus testa reticulata. Myrtus stipularis, *Hook. et Arn. in Bot. Misc.* vol. iii. p. 316. Eugenia leptospermoides, *DC. Prodr.* vol. iii. p. 266?

Hab. Chonos Archipelago; *C. Darwin, Esq.*

Rami graciles, cortice cinereo tecti. *Folia* ¼ unc. longa, flavo-virescentia, subtus pallidiora. *Pedunculi* ½ longit. folii. *Capsulæ* suberectæ, ¼ unc. longæ, obscure pentagonæ, extus infra lobos calycis poris 5 irregulariter rumpentes. *Semina* parva, linearia, fugacia.

This plant is the only recorded American species, not, only of *Metrosideros*, but of the whole group or tribe of *Myrtaceæ*, to which that genus belongs, and which is chiefly confined to Australia, where the *Leptospermæ* form a conspicuous feature in the vegetation; they are also numerous in New Zealand, and are found in the Indian Islands, eastward of the Malay peninsula. The group, in question, contains upwards of 450 species, almost exclusively limited to an area bounded by the equator on the north, New Zealand on the east, Tasmania on the south, and Sumatra on the west; to these points they, as it were, radiate from the principal parallel of New Holland, which Mr. Brown considers to contain their maximum. From Australia the tribe seems to extend eastward rather than westward, more species inhabiting New Zealand, small though that country, comparatively speaking, is, than the East Indian Islands. They occur, though very sparingly, throughout the distant Isles of the Pacific Ocean, as far east as Pitcairn's Island. The tribe has a few solitary species in very remote countries; and these I would term outlying species, for they are so typical of an Australian flora as to appear foreigners among the vegetation of other countries. Such are *Beckia frutescens* of China, *Metrosideros angustifolia* of the Cape of Good Hope, and the *Metrosideros stipularis* of Chili. Each of these is the lone representative of a group, which, as it were, holds a more distinguished place amongst its fellow plants in another part of the world, and to the eye of the botanist is a stranger and wanderer in the land it inhabits. Other natural orders, characteristic of Australia, afford parallel cases to this, *viz. Epacrideæ, Goodeniaceæ* and *Stylideæ*.

It is chiefly in the extreme south and upon the west coast of America that the representatives of Australian

Orders, and those characteristic of the eastern portions of the old world, are found; thus, the plant in question is confined to the west shores of Chili; *Prionotes Americana*, the only South American Epacrideous plant, to Fuegia and western Chili; *Goodenia radicans* to the Pacific coasts of Chili; *Forstera uliginosa*, the only American *Stylidia*, to the mountains of Fuegia; *Astelia pumila*, to the same localities; *Veronica elliptica* (*decussata*, auct.), a New Zealand species, also to Fuegia. To these might be added many other instances, which, though individually not so conclusive, shew by their number that proximity in geographical position is accompanied by a certain resemblance in some of the vegetable productions, even in countries whose flowers are in every other respect unlike; a similarity, seldom amounting to specific identity in the tropical and warmer latitudes, but frequently so in proportion as we approach the poles. For an instance, I would cite the Floras of Chili, between 40° and 45°, containing many of the features of New Zealand and Australian Botany, though few or no species are common to both; whilst Fuegia and the countries between 50° and 56°, contain far more representatives of south New Zealand and Tasmanian plants, and a very considerable proportion of species found in those countries.

A native also of Valdivia and Chiloe and a very peculiar plant, especially in the presence of large glands on either side the base of the petiole of every leaf, which are formed of an inflation of the cuticle of the bark.

2. MYRTUS, *L.*

1. Myrtus *Ugni*, Molin., *Chil. ed. Gall.* p. 183. *Feuill. Obs.* vol. iii. p. 44. t. 31. *Lamk. Encycl.* vol. iv. p. 412. *DC. Prodr.* vol. iii. p. 239. Eugenia Ugni, *Hook. et Arn. in Bot. Misc.* vol. iii. p. 318. "Ugni" *incolarum, et* "Murtilla" *Hispanorum.*

Hab. Chonos Archipelago; *C. Darwin, Esq.*

The leaves of this species vary considerably, both in size and shape, the largest being at least an inch long, perfectly elliptical and attenuated at both extremities, while in other specimens they are much smaller, broadly ovate or even rotundate. Feuillé's description of the seeds inclines me to refer this plant to the genus *Myrtus*; he says it is abundant in Chili, where the natives express the juice of the fruit, which, when mixed with water, affords a grateful drink. The berries smell agreeably. Feuillé's figure may possibly refer to some other plant and not the one he describes. The *Myrtus Ugni* appears to abound, from the latitude of Concepcion, south to the Chonos Archipelago.

2. Myrtus *Nummularia*, Poiret, *Encycl.* vol. iv. p. 407. *Gaudichaud in Ann. Sc. Nat.* vol. v. p. 106. t. 2. f. 5. *et in Freyc. Voy. Bot.* p. 138. *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 619. *DC. Prodr.* vol. iii. p. 238. "Lucet musqué," *Pernetty Voy.* vol. ii. p. 58.

Var. β, *major*; caule robustiore, foliis majoribus, pedicellis paulo longioribus, lobis calycinis petalisque angustioribus.

Hab. South Chili, Fuegia and the Falkland Islands; *Commerson* and all subsequent voyagers. Var. β, Chiloe, *Capt. King*. Chonos Archipelago, *C. Darwin, Esq.*

One of the most common denizens of the countries it inhabits, spreading over the ground amongst the roots and stems of other plants, like the *Vaccinium Oxycoccos* or cranberry of Britain. The berries have a sweet and agreeable flavour, they are red and very fleshy. The leaves afforded a substitute for tea to the sealers who visited, and the first settlers in, the Falkland Islands; this beverage was so relished, that in spite of its diuretic properties, the Gauchoes in these Islands prefer it to Chinese tea. Capt. King collected the species at Concepcion in Chili, its northern limit. The *M. oxycoccoides*, Benth., of Colombia, is a very nearly allied plant, but its leaves are generally smaller and always truly ovate; here invariably oblong. It is possible that the var. β may prove distinct, though I am not inclined to consider it so. This creeping South American *Myrtus*, together with

with some allied species from Peru, are perhaps the most insignificant plants of the whole natural order, and especially of the genus of Myrtles; though the *M. Nummularia*, by contributing largely to the formation of peat, performs a highly important function in the economy of nature. The leaves are often preserved quite entire some feet below the surface of the soil, and I was able to recognize earth, sent to the Royal Gardens at Edinburgh from New Zealand, as having come originally from the Falkland Islands or South America, because of the abundance of leaves of this plant contained in it.

3. EUGENIA, *Mich.*

1. EUGENIA *apiculata*, DC. *Prodr.* vol. iii. p. 276. *Hook. et Arn. in Bot. Misc.* v. iii. p. 321.

Var. *β*, *Arnyan*, foliis glaberrimis ½–¾ pollicaribus late ovalibus, pedicellis omnibus unifloris.

HAB. Var. *β*, Chonos Archipelago; *C. Darwin, Esq.*

A very variable plant; apparently not uncommon in Chili, between the Andes and the sea-coast, and from Concepcion to the Chonos Archipelago. The pedicels are exceedingly various in length, when they are much elongated the plant becomes *E. affinis*, Gill., and I am inclined to consider the *E. Gillievii*, H. and A., as another variety. The original species has leaves slightly hairy beneath, with a rufous pubescence. None of the numerous specimens that I have seen are in fruit, and the genus therefore is doubtful.

2. EUGENIA *Darcinii*, Hook. fil.; ramis teretibus, cortice rimoso cinereo, junioribus pubescentibus, foliis petiolatis glaberrimis coriaceis elliptico-oblongis abrupte acuminatis subenerviis obscure punctatis margine incrassato, pedunculis terminalibus lateralibusque puberulis folio æquilongis erectis paucis unifloris aliisque racemosis pedicellis oppositis, floribus parvis, calyce depresso quinquefido segmentis obtusis, staminibus plurimis petalis cucullatis bis longioribus.

HAB. South Chili, Cape Tres Montes; *C. Darwin, Esq.*

Frutex? *Folia* coriacea, ¾ unc. longa, ½ lata, nervis lateralibus divaricatis. *Pedunculi* infra calycem articulati, minutissime bracteolati, pedicellis basi bracteolatis. *Calyx* 2 lin. latus, segmentis patentibus. *Petala* alba. *Stylus* elongatus, validus. *Ovarium* immaturum triloculare?, loculis bi-ovulatis.

Without the ripe fruit I am unable to refer this plant satisfactorily to its genus; it accords sufficiently with many Chilian species of *Myrtaceæ* which have been hitherto placed in *Eugenia*.

A very great number of shrubby *Myrteæ* inhabit the Chilian coast, between Chiloe and Concepcion; a singular circumstance when it is considered how suddenly they cease to the southward of Cape Tres Montes. Probably no less than fourteen species occur within these limits, whilst not one is to be found in the Strait of Magalhaens, only three hundred miles further south, having a precisely similar climate, and where the features of soil and surface are almost identical. The predominance of the natural family in the one case is remarkable, though not more than it is in New Zealand, where to a certain extent they abound also, but their sudden cessation appears inexplicable being unaccompanied by any complete suppression of other tribes equally numerous in Chili. Again, a casual observer, on examining a collection of Chilocan plants, would be apt to conclude that these shrubby *Myrteæ* must afford a peculiar if not a predominant aspect to the vegetation, and yet we hardly see them alluded to in the excellent published accounts of Chiloe, whence it is evident that botanical regions, as now defined, afford insufficient criteria for obtaining a knowledge of the distribution of natural orders. That locality where a group is most fully developed, where the greatest number of its species grow, may not be the one where that group is most conspicuous or the individuals in greatest number. We may safely infer on this subject, that the law of nature is to be learned from a knowledge of the absolute numbers of different species a country may possess, and the proportion the groups bear to one another, and when gained it will be found to harmonize with other circumstances: thus we find

that grasses increase in number, proportionally to other natural families, in proceeding from the tropical to the polar regions, though it is on the Savannahs of the warmer temperate zones that they form the most conspicuous traits in the landscape.

Again, New Zealand, Tasmania, and California must be considered the regions of the Pines, if the number of species in a given area were to determine the point; but all the *Coniferæ* now growing in those three countries, amounting though they do to no less than forty kinds, would not, if planted together, cover the surface that the Scotch Fir does in Europe. The region of the pines is in the latitudes approaching the tropics; these trees diminish, in number of species and in the proportion they bear to other natural orders, when proceeding northwards from thence, and actually cease immediately beyond that point, where, from the abundance of one species, they appear to be most fully developed. It is interesting to every one to know what vegetable production gives a country the peculiar features of its landscape; but attractive or wonderful though those features be, they afford no clue to the botanist, who would understand, not what the vegetation of a country appears to be, but what it really is.

XVII. PORTULACEÆ, *Juss.*

1. MONTIA, *L.*

1. MONTIA *fontana*, L., *DC. Prodr.* vol. iii. p. 362. *Flora Antarct.* pt. 1. p. 18. M. linearifolia, *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 619. M. lamprosperma, *Chamisso in Linnæa*, vol. vi. p. 565. t. 7.

HAB. Falkland Islands; *D'Urville, J. D. H.* Kerguelen's Land; *J. D. H.*

In the first Part of this work I described the seeds of the varieties of *Montia* from these two localities, and expressed my opinion that the genus contains but one species, the seeds of which are variable in size and in the surface of the testa. In the Kerguelen's Land individuals they also vary much in shape.

Ilia.

XVIII. CRASSULACEÆ, *Juss.*

1. BULLIARDA, *DC.*

1. BULLIARDA *moschata*, D'Urv. *in Mém. Soc. Linn. Paris*, vol. iv. p. 618. *Gaud. in Freyc. Voy. Bot.* p. 188. *Fl. Antarct.* pt. 1. p. 15. B. Magellanica, *DC. Bull. Philom.* n. 49. Tillæa moschata, *DC. Prodr.* vol. iii. p. 382. *Hook. Icon. Plant.* t. 535. Crassula moschata, *Forst. Act. Gott.* 9. p. 26.

HAB. South Chili and Fuegia, from Cape Tres Montes to Cape Horn; *Banks and Solander, Forster, Capt. King, C. Darwin, Esq., J. D. H.* Falkland Islands, *Gaudichaud, D'Urville, Mr. Wright, J. D. H.* Kerguelen's Land, *J. D. H.*

Invariably a sea-side plant, very abundant on rocky beaches where fresh water enters the sea.

XIX. GROSSULARIEÆ, *DC.*

1. RIBES, *L.*

1. RIBES *Magellanicum*, Poir.; inerme, petiolis pedunculis ramisque junioribus puberulis, foliis petiolatis ovatis v. late ovato-rotundatis basi truncatis v. cordatis trilobis grosse duplicato-serratis junioribus glanduloso-punctatis senioribus impunctatis supra glabriusculis subtus nervis puberulis, racemis multifloris florentibus pendulis fructiferis elongatis sæpe suberectis, pedicellis brevibus, bracteis ligulatis floribus æqui-

longis, calyce late campanulato lobis obtusis, petalis minimis apice reflexis, stylo bicruri. R. Magellanicum, *Poiret, Encycl. Suppl.* vol. ii. p. 856. *DC. Prodr.* vol. iii. p. 482.

Hab. Strait of Magalhaens; *Commerson*. Port Famine, *Capt. King*. South part of Tierra del Fuego, *C. Darwin, Esq.* Cape Horn, *Mr. Eights*.

A strictly Fuegian species, apparently not met with to the northward of the Strait of Magalhaens. On the coast of Chili it is replaced by several others, and on the high mountains of Colombia a very similar plant grows, distinguishable however, at first sight, by its less toothed and crenated leaves and subulate bractæ. The berries of the present have a very agreeable flavour, and may be used for tarts, &c. Another similar, but I think different plant, was collected by Capt. King in Chiloe; his specimens are, however, too imperfect for determination.

XX. SAXIFRAGEÆ, *Juss.*

1. ESCALLONIA, *Mutis.*

1. Escallonia *serrata*, Smith, *Icon. ined.* vol. ii. t. 31. *DC. Prodr.* vol. iv. p. 3. *Hook. Ic. Plant.* t. 540. *Homb. et Jacq. Voy. au Pole Sud, Plant. Phan. Dicot.* t. 14. P. Stereoxylon serratum, *Poir. Encycl.* vol. vii. p. 435. Celastrus venustus, *Banks et Sol. MSS. cum icone in Mus. Banks.*

Hab. Fuegia and the Strait of Magalhaens; *Commerson, Banks and Solander*, and all succeeding voyagers.

The most southern species of a genus peculiar to the American continent. It is found as far as Cape Horn, where, along with *Veronica elliptica* and *Berberis ilicifolia*, it inhabits the skirts of forests near the sea.

2. Escallonia *macrantha*, Hook. et Arn. *Bot. Miscell.* v. iii. p. 341.

Hab. South Chili; Chonos Archipelago; *C. Darwin, Esq.*

A very distinct species, which may be recognized by the great size of the flowers, and by the large obtusely crenato-serrate leaves. It is also a Valdivian plant, though confined to that portion of Chili which is near to Chiloe.

2. CORNIDIA, *R. et P.*

1. Cornidia *integerrima*, Hook. et Arn. *in Bot. Miscell.* vol. iii. p. 344. *Poeppig et Endlicher, Nov. Gen. et Sp. Plant. Am.* p. 10. t. 17. *Delessert, Icones Selectæ*, vol. iv. p. 46. t. 79. Hydrangea scandens, *Poepp. in DC. Prodr.* vol. iv. p. 666.

Hab. South Chili; Chonos Archipelago; *C. Darwin, Esq.*

The fruit of *Coruldia integerrima* is a small coriaceous three-celled capsule, very similar to that of *Hydrangea*. The carpels separate from one another, and are loosely invested by the tube of the calyx, bearing a placenta on each inflexed margin. The seeds are numerous, ascending, very small and linear-lanceolate, covered with a loose testa, which expands at the base into an irregularly cup-shaped funiculus, and is prolonged also at the other extremity beyond the albumen, its surface is marked by parallel, sometimes anastomosing nerves or folds of the investing membrane, which include each a solitary spiral vessel. The albumen is fleshy. Embryo axile, cylindrical, with a stout large radicle and two small cotyledons; it is likewise of a curiously reticulated structure: these characters of the testa and of the substance of the albumen also exist in *Hydrangea vestita*, an East Indian plant. There are some other genera which agree with the present in the form and structure of the seed and loose testa, as *Philadelphus, Deutzia*, and *Decumaria*. In all, the investing membrane of the seed is highly reticulated, or rather cellular, that of *Philadelphus tomentosus*, in particular, so much resembling *Cornidia* in all but the absence of the

spiral vessels, that I should have been induced to suspect its affinity to *Hydrangeæ*, did not its other characters even more clearly indicate its true place in the natural system, which is, along with *Deutzia* and *Decumaria*, in the class *Saxifrageæ*. *Datisca* is another genus where the seed is of a very similar nature; the testa is formed of large cells so loosely connected that they may be separated without rupture of the walls, and though not so lax or produced at the apex, the funiculus expands, leaving a little cup at the base of the seed when detached; the albumen and embryo are the same as in *Saxifrageæ*. Though in these respects, and in the adherent calyx, *Datiscæ* approach *Hydrangeæ*, in others they agree with *Gunnera*, as I have indicated under that genus.

In the figure of this plant, given by Poeppig, the æstivation of the corolla is imbricate, instead of valvate. Delessert's 'Icones' contain an excellent delineation, in which, however, the plicæ of the testa are omitted; and the stamens are quite different from those of the flowers I have examined, where they are very large and provided with stout and somewhat fleshy inflected filaments; possibly the flowers are unisexual. The pollen is globose, but obscurely three-lobed and rough on the surface.

Cornidia integerrima is common in Valdivia and Chiloe, where Mr. Bridges says that it is called "Coybo," and forms the largest tree of the country, being from 60–120 feet in height; it is further interesting from being the only Chilian representative of *Hydrangeæ*.

3. SAXIFRAGA, *L.*

1. Saxifraga *exarata*, Vill. *Dauph.* vol. iii. p. 674. t. 44. *DC. Prodr.* vol. iv. p. 27. S. Magellanica, *Poiret, Encycl.* vol. vi. p. 686. *Don, Saxifragæ in Trans. Soc. Linn.* vol. xiii. p. 432. *Sternberg, Rev. Sax.* p. 39. t. 11. f. 1. Muscaria Magellanica, *Hav. Enum. Sax.* p. 38.

Varietates Antarcticæ sequentes sunt:—

Var. β, *integrifolia*; foliis superioribus integris.

Var. γ, *laxa*; foliis integris trifidisve laxius dispositis patentibus inferioribus reflexis.

Var. δ, *breviscapa*; dense cæspitosa, pedunculo brevissimo, flore inter folia summa sessili.

Hab. Strait of Magalhaens; *Commerson*. Port Famine; *Capt. King*. Mount Tarn, 2000 feet; *C. Darwin, Esq.*

Specimens, numerous and good, which I have examined, enable me unhesitatingly to refer this species to the *S. exarata* of Villars, as characterized by M. Seringe in De Candolle's Prodromus, and they entirely accord with examples gathered on Mount Olympus by Aucher-Eloy, and others from Iceland, labelled *S. Grænlandica* (in Herb. Hook.). In Capt. King's collection, is one exactly similar to *S. silenifloræ*, Chamisso, of Arctic N. W. America. Count Sternberg has sent the same plant as the trifid-leaved state of var. β, from Vallesia under the name of *S. leucantha*, Thomas; and I am unable to distinguish the specimens specifically from *S. uniflora*, Br., of Melville Island, which has sometimes three-flowered peduncles. The *S. cæspitosa* approaches all the above very closely, but its leaves are not so strongly nerved.

This is, in the south, as Protean a species as the *S. hypnoides* of the opposite hemisphere, though a much rarer plant. Capt. King's specimens vary so materially that De Candolle's character of *S. Magellanica* is inapplicable to all the states. The leaves are entire or trifid, very densely imbricated, or lax like those of *S. Peruviana*; the peduncles long or short, and one or many-flowered. The flowers are about the size of those of *S. cæspitosa*, a species which the present very closely resembles. It is not improbable that, eventually, some of the Peruvian Saxifrages will merge into this, the Andes thus seeming to afford a direct communication between the northern and southern hemispheres, of which this plant has availed itself. It appears to be scarce in Fuegia, and to affect the mountains, having only been gathered at a considerable elevation on the Andes, on the north side of the Strait of Magalhaens. It is singular that a species occurring at this height, should not be also seen at lower elevations in cooler latitudes, such

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Fitch del. et lith.

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Saxifraga bicuspidata, Hook. fil.

being manifestly the case in the northern hemisphere with this species and its congeners. May we suppose its dispersion to be yet incomplete? and that, at some future period, it will spread further south and fully assume in those regions the position held by some of its congeners in the northern?

2. SAXIFRAGA *bicuspidata*, Hook. fil.; laxe cæspitosa, glaberrima, caulibus decumbentibus gracilibus parce ramosis foliosis, foliis anguste lineari-spathulatis uninerviis apice bicuspidatis marginibus cartilagineis, pedunculo axillari nudo unifloro, calycis lobis apice emarginato-bifidis, staminibus 5, calyce semisupero. (TAB. XCVII.)

HAB. South part of Tierra del Fuego; *C. Darwin, Esq.* Hermite Island, Cape Horn; on the mountains, 1,200 feet; *J. D. H.*

Laxe cæspitosa, siccitate rufo-fusca et flaccida, apicibus ramulorum foliisque junioribus viridibus, tota glaberrima. *Caules* pollicares, graciles. *Folia* $\frac{1}{4}$–$\frac{1}{2}$ unc. longa, anguste lineari-spathulata, medio tenuiter uninervi, apice bicuspidato, marginibus anguste cartilagineis. *Pedunculi* axillares, solitarii, nudi, folio subæquilongi, post anthesin elongati. *Calyx* basi conicus, profunde quinquelobus, lobis ad apices emarginato-bifidis, segmentis acutis. *Petala*? *Stamina* 5. *Capsula* semisupera, compressa, carpellis supra medium liberis deinde divaricatis, rima ventrali sursum spectante dehiscentibus, stigmatibus simplicibus sessilibus. *Semina* pauca, testa brunnea subcoriacea; albumine carnoso; embryone tereti.

A very singular species, hitherto detected only on the mountains at the extreme south part of the American continent. It exhibits little resemblance to its congeners, except in having somewhat of the habit of *S. oppositifolia*, which is highly variable in the number of stamens. To the pentandrous *S. ranunculifolia*, Hook., of the Rocky Mountains, the present has but slight specific affinity.

PLATE XCVII. *Fig.* 1, Branch and leaves; *fig.* 2, an old flower; *fig.* 3, stamen; *fig.* 4, ripe capsule; *fig.* 5, seed:—all *magnified*.

6. CHRYSOSPLENIUM, *Tourn.*

1. CHRYSOSPLENIUM *macranthum*, Hook.; glaberrimum, caule procumbente basi repente, foliis oppositis petiolatis ovato-cordatis obtusis grosse sinuato-crenatis in petiolum attenuatis, pedunculis terminalibus bracteatis trifloris, floribus di-trigynis intermedio sessili, ovulis placentis parietalibus affixis. C. macranthum, *Hook. in Lond. Journ. of Bot.* vol. i. p. 458. t. 16. C. elevatum, *Banks et Sol. in Mus. Banks. cum icone.*

HAB. Strait of Magalhaens; Eagle Bay, Port Famine, *Capt. King.* Good Success Bay, *Banks and Solander.*

A very handsome species and much the largest-flowered of the genus. The seeds are attached to parietal placentæ, having their origin upon anastomosing veins, which ultimately lead to the diverging styles.

2. CHRYSOSPLENIUM *Valdivicum*, Hook.; glaberrimum, caule repente, foliis oppositis petiolatis oblongo-rotundatis obscure sinuatis basi subtruncatis. C. Valdivicum, *Hook. in Lond. Journ. of Bot.* vol. i. p. 459. t. 17.

HAB. Hermite Island, Cape Horn; in open places near the sea; *J. D. H.*

My specimens are extremely imperfect, though sufficient to identify the species with that from Valdivia, which does not appear to have been found in any intermediate locality. The present is distinguished from *C. macranthum* by its more rounded and scarcely sinuated leaves, somewhat truncate at the base. Some of Mr. Bridges' specimens have leaves fully 1½ inches long.

7. DONATIA, *Forst.*

4. DONATIA *fascicularis*, Forst.; *Char. Gen.* t. 5. D. Magellanica, *Lamk. Illust.* vol. i. p. 217. t. 51.

DC. Prodr. vol. iv. p. 53. *Hook. Ic. Plant.* t. 16. Polycarpon Magellanicum, *Linn. fil. Suppl.* p. 115. *Forst. Comm. Goett.* vol. ix. p. 28. t. 8. Orites depressa, *Banks and Sol. in Mus. Banks. cum icone.*

Hab. South Chili and Fuegia; from the Chonos Archipelago to Cape Horn; *Forster, Banks and Solander, Capt. King, C. Darwin, Esq., J. D. H.*

I have examined several specimens of this plant in the collections of Capt. King and Mr. Darwin, and find uniformly three stamens and three styles; the flowers seem occasionally incomplete, and then are scarcely half the size of the fertile ones, and with much shorter stamens and styles. The tube of the calyx conical, its limb irregularly cut into 5–7 segments of unequal length, there are also one or two bracteæ, so placed on the ovarium that they are with difficulty distinguishable from the calycine lobes. The petals are also inserted with the latter and they seem to pass the one into the other; they are white and of unequal size, much smaller in the incomplete than in the fertile flowers. Within the petals is a broad flat disk, from the centre of which arise the stamens, three in number, alternating with, but almost united at their base to, the three long diverging styles: the filaments are elongate and subulate; the anthers extrorse; the pollen globular, rough, and containing an obscurely three-lobed nucleus. Ovarium three-celled, each cell bearing at the upper portion of the inner angle a somewhat fleshy placenta, covered with many series of horizontal or ascending ovules. Apparently only a few seeds ripen in each cell.

Donatia is a very anomalous genus of *Saxifrageæ*, though I entirely agree with M. St. Hilaire that it does belong to that Order. The gradual passage of the leaves into bracts, of the bracts into calycine lobes, and of these again into the petals, together with the adnate tube of the calyx, and the extrorse anthers, (a sufficiently obvious, but hitherto unnoticed character, foreign to *Saxifrageæ*), are what may be observed in *Calycantheæ*. The analogy between this plant and *Stylideæ*, through *Forstera*, is very striking, especially in the tufted habit and linear leaves, in the often abortive flowers, the form of the inferior ovary, and the irregular insertion of the calycine lobes and of the bracts on the tube of the calyx, in the variable number of the unequal petals, which, though gamopetalous in *Forstera* and *Stylideæ*, are occasionally separate in the allied Orders *Lobeliaceæ* and *Goodenovieæ*, in the flat disk intervening between the base of the petals and the stamens, in the close application of the filaments to and their alternation with the three styles, altogether forming, as it were, one body in the centre of the flower, in the extrorse anthers and somewhat too in the form of the pollen; in the axile placentation and numerous ascending ovules, and in the form of the seed, so far as I can compare it with immature ones of *Forstera clavigera*, excepting that the raphe in *Donatia* is prominent.

The *Donatia fascicularis* is very abundant throughout Fuegia and the western portions of South Chili, covering the surface of the ground in densely-matted and widely-extended, hard, bright-green patches: composing, with a few other plants, such as *Caltha appendiculata* and particularly *Astelia pumila*, the greater proportion of the peat-earth in those countries. It is one of the few bog plants, characteristic of the South Fuegian Flora, that has not been detected in the Falkland Islands.

XXI. UMBELLIFERÆ, *Juss.*

1. AZORELLA, *Gaud.*

§ I. *Caulibus dense fastigiatis, foliis subsessilibus arcte imbricatis coriaceis, umbellis brevissime pedunculatis*:—Chamitis, *Banks et Sol.*

1. Azorella *cæspitosa*, Cav.; dense cæspitosa, foliis arcte imbricatis basi latioribus vaginantibus patentibus subrecurvis lineari-bus acutis integerrimis coriaceis vagina filamentosa, umbella florente abbreviata inter folia summa sessili, calycis tubo piloso margine obtuse et brevissime 5-lobo, fructu immaturo oblongo subquadrato dorso compresso. Azorella cæspitosa, *Cav. Ic.* vol. v. p. 57. t. 484. f. 2. *Poiret, Encycl. Suppl.* vol. i. p. 551. *DC. Prodr.* vol. iv. p. 77. A. gummifera, *Poiret*, l. c. A. crassifolia, *Persoon, Syn.* vol. i.

p. 303. A. arctioides, *Willd. Herb.* A. cæspitosa, γ, *Willd. Sp. Pl.* vol. i. p. 1366. Mulinum scaule, *Pers. Syn.* vol. i. p. 309. Bolax arctioides, *Spreng. Spec. Umbell.* vol. i. p. 11. B. cæspitosus, *Spreng. in Rœmer et Schultes Syst. Veg.* vol. vi. p. 359. (*exclud. syn.* Selini scaulis. *Cav.*) Bolax foliis ovato-acuminatis &c.? *Commerson, fid. Cavanilles.* Hydrocotyle gummifera, γ, *Lamk. Encycl.* vol. iii. p. 156.

HAB. Strait of Magalhaens; Port Gregory, *Capt. King*; West Falkland Island, *Née, Capt. Sullivan.*

Caules plerique uncinles, exemplaribus *Falklandicis* 3–4 pollicares, ramosi, rigidi, e foliis subrecurvis squarrosi. *Folia* ¼ unc. longa, lœte viridia, inferiora sæpe discolora. *Umbella* 6–8-flora. *Pedicelli* florum brevissimi, post anthesin verosimiliter elongati, ut in icone Cavanillesii. *Petala* oblonga, subobtusa. *Stylopodia* majuscula. *Fructus* immaturus ad suturam vix contractus, dorso planiusculus.

It it exceedingly difficult to unravel the synonymy of the species belonging to this genus. The name of *Chamitis* was applied to *A. filamentosa*, Lam., and *A. trifurcata*, Hook., by Gaertner in 1788, adopted from the MSS. of Banks and Solander. Those voyagers discovered a third species, *Chamitis trifurcata*, a name which Gaertner has accidentally affixed to his plate of *A. tricuspidata*.

The *Azorella cæspitosa*, according to a statement made by Cavanilles, l. c., was probably first detected by Commerson; the specimens figured by the author just quoted are from the Cordillera of Chili, and Mr. Darwin having gathered it at Port Desire, and Capt. King at Cape Fairweather, it is probably a very general plant throughout the southern parts of Patagonia.

2. AZORELLA *filamentosa*, Lamk.; laxe cæspitosa, caulibus diffusis ramosis, ramis congestis interdum elongatis, foliis lineari-lanceolatis subspathulatis subcymbiformibus marginibus inflexis integerrimis in petiolum æquilongum basi vaginantem longe setoso-ciliatum desinentibus, umbellis breviter pedunculatis 6–8-floris, fructu ovato subtereti, mericarpiis dorso convexis 5-jugis. A. filamentosa, *Lamk. Encycl.* vol. i. p. 344. *Ill. Gen.* t. 189. f. 1. (*pessime, e icone Gaertneri imitata*). *Vahl, Symbol.* vol. iii. p. 47. *DC. Prodr.* vol. iv. p. 77. *Hook. Ic. Plant.* t. 541. *Hombron et Jacq. Voy. au Pole Sud, Bot. Dicot. Phan.* t. 15. B. A. Chamitis, *Pers. Synops.* vol. i. p. 303. *D'Urville in Mém. Linn. Soc. Paris*, vol. iv. p. 614. *Gaudichaud in Freyc. Voy. Bot.* p. 136. Chamitis integrifolia, *Gaertner de Fruct.* vol. i. p. 94. t. 22 (*e MSS. Banksii et Solandri in Mus. Banks. cum icone*). Bolax filamentosa, *Spreng. in Schult. Syst. Veget.* vol. vi. p. 359.

HAB. Strait of Magalhaens, *Commerson*; Good Success Bay, *Banks and Solander*; Port Famine, *Capt. King*; Hermite Island, *J. D. H*; Falkland Islands, *D'Urville, Mr. Chartres, J. D. H.*

The genus *Azorella* was founded upon this species and is probably a name of Commerson's; for Lamarck, who adopted it in 1783, remarks that, not knowing the fruit, he cannot see how it differs from *Hydrocotyle*.

The present is a very common plant throughout Fuegia and the Falkland Islands. Gaertner mentions having examined specimens in the Banksian Herbarium, with three carpels.

3. AZORELLA *trifurcata*, Gaertn.; dense cæspitosa, foliis arcte imbricatis patentim recurvis rigidis oblongis superne dilatatis in lacinias 3 paulo divaricatas cuspidatas fissis basi vaginante marginibus obscure ciliatis pilis deciduis, umbella subsessili, involucri foliolis parvis subulatis subciliatis, fructibus late ovato-oblongis teretiusculis, mericarpiis 5-jugis dorso convexis, calycis limbo obtuse 5-dentato. A. trifurcata, *Hook. Ic. Plant.* t. 539. A. tricuspidata, *Lamk. Illust. Gen.* vol. ii. t. 189. f. 4. *Hombron et Jacq. Voy. au Pole Sud, Bot. Dicot. Phan.* t. 15. C. Chamitis trifurcata, *Banks et Sol. MSS. in Mus. Banks. cum ic. Gaertner de Fruct.* vol. i. p. 95. C. tricuspidata, *Gaertner, l. c.* t. 22. f. 4 (*non Banks et Solander*). Species ita cum sequente et *Bolax glebaria* confusa ut synonyma Lamarckii, Poiretii, Willdenoviique extricare nequeam.

HAB. Fuegia; Good Success Bay, *Banks and Solander*. Cape Gregory and Port Famine, *Capt. King.*

Rather a scarce plant and perfectly distinct from the following, with which it has been strangely confounded, partly because Gaertner inadvertently applied the name of *A. tricuspidata* to his figure of Banks' *A. trifurcata*, and partly owing to the confusion in which the whole group to which it belongs has long been involved, and the reference of many different umbelliferous plants with a tufted habit and simple umbels, by Lamarck, to the *Bolax gleboria* of Commerson.

4. Azorella *lycopodioides*, Gaud.; cæspitosa, caulibus ramosis dense fasciculatis, foliis arcte imbricatis erectiusculis profunde trifidis laciniis subulatis pungentibus petiolis concavis latis basi vaginantibus amplexicaulibus marginibus argute ciliato-serratis, umbellis 3–4-floris fructiferis pedunculatis, pedunculo valido, involucri foliolis 2 late ovatis cymbiformibus argute et profunde incisc-serratis, pedicellis brevissimis, calycis limbo 5-dentato, fructu globoso, carpellis lævibus dorso convexis ecostatis. A. lycopodioides, *Gaudichaud in Ann. Sc. Nat.* vol. v. p. 105. t. 3. f. 1. *et in Freyc. Voy. Bot.* p. 136. *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 614. *DC. Prodr.* vol. iv. p. 77. Chamitis tricuspidata, *Banks et Sol. MSS. in Mus. Banks. cum icone* (*non Gaertner*).

Hab. Tierra del Fuego; Port Famine, *Capt. King*; Good Success Bay, *Banks and Solander*; Hermite Island, *J. D. H.*; Falkland Islands, abundant, *Gaudichaud, D'Urville, &c.*

Found at all elevations, both in Fuegia and in the Falkland Islands, and so much resembling *Colobanthus subulatus*, that the two plants have often been taken for each other and for the *Muiarum fasciculatum*, Forst., a New Holland and New Zealand plant, which is hence erroneously described as being also a native of the Strait of Magalhaens. The fruit of this species certainly differs from that of the two former, and they, again, from the carpels of *A. cæspitosa* and the following; I have, however, brought them all under one genus, feeling assured that the details of the form of the mericarps do not afford the important characters in this group that they do in some other *Umbelliferæ*.

5. Azorella *Selago*, Hook. fil.; dense cæspitosa, caulibus fastigiatis sæpe elongatis ramosis compactis, foliis dense et arcte imbricatis appressis petiolo cymbiformi late vaginante amplexicauli lamina dilatata coriacea concava 3–7-fida intus longe setoso-ciliata segmentis oblongis subacutis integerrimis, umbella 3-flora breviter pedunculata, involucri foliolis linearibus subacutis, dentibus calycinis acutis, fructu ovato stylis elongatis terminato, mericarpiis dorso paulo convexo compressis 5-jugis ad suturam contractis. (Tab. XCIX.)
Cookia, *Anderson's MSS. in Bibl. Banks.*

Hab. Tierra del Fuego, south part, *C. Darwin, Esq.* Port Famine, *Capt. King.* Hermite Island, towards the top of the mountains, *J. D. H.* Kerguelen's Land, covering the ground near the sea, *Anderson, J. D. H.*

Caules longitudine varii, 1–5 unc. longi, plerumque crassitie pennæ olorinæ, foliis imbricatis dense tecti. *Foliorum* petioli suberosi; lamina plerumque latior quam longa, concava, intus setis elongatis sparsis aucta, segmentis 1-nerviis. *Flores* pallide rosei.

The fruit of this plant is so dorsally compressed and contracted at the sutures, as almost to justify its being removed from this genus and even group. The calycine teeth and the styles are rather longer than is usual in *Azorella*; still, as mentioned above, the fruits of almost all the species that I have examined differ so widely from one another, that to separate this or either of the former would involve the complete dismemberment of a genus, of which all the species, except the following, are very closely allied.

Azorella Selago is the most abundant plant in Kerguelen's Land, covering the rocky ground close to the sea with brown masses many feet in extent, and often so soft that the traveller plunges into or through them up to the middle. Like the curious *Bolax glebaria* of the Falkland Islands, the living part of the plant forms a crust over a

Fitch del. et lith.

Reeve imp.

Azorella selago. Hook. fil.

Fitch del. et lith.

Azorella Ranunculus, D' Urv.

Reeve imp.

vast mound of debris, the decaying remains of former years' growth, through which the roots descend into the ground. In Fuegia this plant is much scarcer, and only occurs on the mountains in small tufts. I have also seen specimens sent from M' Quarrie's Island by Mr. Frazer.

PLATE XCIX. *Fig.* 1, a leaf; *fig.* 2, umbel with peduncle and involucre; *fig.* 3, a flower; *fig.* 4, a petal; *fig.* 5, ripe fruit; *fig.* 6, transverse section of the same:—all *magnified*.

§ II. *Caule prostrato repente nodoso ad nodos foliose, foliis longe petiolatis, umbellis sublonge pedunculatis.*

6. AZORELLA *Ranunculus*, D'Urv.; glaberrima, caule repente nodoso ad nodos radicante, foliis longe petiolatis rotundatis 4–5-partitis laciniis cuneatis trifidis segmentis rotundatis, petiolis gracilibus basi vaginantibus vaginis membranaceis, pedunculis axillaribus petiolo brevioribus, involucri foliolis linearibus subacutis pedicellis longioribus basi utrinque dente auctis, umbella 3–5-flora, calycis limbo obtuse 5-dentato, fructu breviter ovato subtereti ad commissuram contracto, mericarpiis dorso convexis obtuse 3-jugis. (TAB. XCVIII.) A. Ranunculus, *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 614. *Gaud. in Freyc. Voy. Bot.* p. 136. *DC. Prodr.* vol. iv. p. 77.

HAB. Falkland Islands; by running streams and the margins of fresh-water lagoons, *D'Urville, J. D. H.*

Herba facie *Hydrocotylis*. *Caules* graciles, repentes, ad nodos foliosi radicesque fibrosas emittentes. *Petioli* erecti, unciales. *Folia* ½ unc. diametro, lucide viridia, subnitida. *Flores* parvi, pallide flavi seu albi. *Fructus* breviter pedicellatus.

This plant differs so materially in habit from those described above, that I have placed it in a separate section of the genus. The general aspect is altogether that of a *Hydrocotyle*, with the fruit of an *Azorella*, to which genus it was rightly referred by D'Urville; it also very much resembles the *Pozoa reniformis*, in Part 1. p. 15. t. xi. where the carpels are however very different. The fruit represented in Plate XCVIII is immature; when fully ripe, the mericarps are more contracted at the suture.

PLATE XCVIII. *Fig.* 1, a leaf; *fig.* 2, a flower; *fig.* 3, petal; *fig.* 4, ripening ovarium; *fig.* 5, young fruit; *fig.* 6, transverse section of the same:—all *magnified*.

2. BOLAX, *Comm.*

1. BOLAX *glebaria*, Commerson, *in Juss. Gen.* p. 266. *Gaudichaud in Ann. Sc. Nat.* vol. v. p. 104. t. 3. f. 2. *et in Freyc. Voy. Bot.* p. 136. *DC. Prodr.* vol. iv. p. 78. *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 614. *Hook. Icon. Plant.* t. 492. B. gummifera *et* B. complicata, *Spreng. Spec. Umbell.* p. 9, 10. B. gummifer, *Spreng. in Roem. et Schultes Syst. Veg.* vol. vi. p. 360. *excl. pleraque synonym.* Azorella cæspitosa, *Vahl, Symb.* vol. iii. p. 48. *Willd. Sp. Pl.* vol. i. p. 1365. *non Cavanilles, et excl. syn.* Chamitis trifurcata, *Gaertn.* A. tricuspidata, *Lamk. Illust. Gen.* t. 189. *fig.* 2 et 3? *certe non* f. 4. *Poir. Suppl.* vol. i. p. 551, *in part.* Hydrocotyle gummifera, *Lamk. Encycl.* vol. iii. p. 156. Chamitis complicata, *Banks et Sol. MSS. in Mus. Banks. cum icone.* Gommier, *Pernetty*, vol. ii. p. 7 et 65.

HAB. Tierra del Fuego, *Commerson*; Good Success Bay, *Banks and Solander*; Hermite Island, growing in tufts on the high mountains, *J. D. H.*; Falkland Islands, very abundant, *Gaudichaud, D'Urville*, and all voyagers.

I have endeavoured to unravel the synonymy of this highly curious and now well-known plant, but cannot ascertain what are the various species figured by Lamarck and partially described by Poiret, both these writers seeming to have had several in view.

Long before the Falkland Islands were colonized from Britain, the present plant had excited considerable curiosity by the very remarkable mode of growth it there assumes and its forming a feature in the landscape that strikes the most casual observer. Now that these islands have been annexed formally to the British dominions, the *Bolax* or Balsam-bog is a production of still greater general interest. In whatever portion of this country the voyager may land, he cannot proceed far along the beach without entering groves of Tussac, whose leaves often wave over his head; nor turn his steps inland without seeing, scattered over the ground, huge, perfectly hemispherical hillocks of a pale and dirty yellow green colour and uniform surface, so hard that one may break the knuckles on them. If the day be warm, a faint aromatic smell is perceived in their neighbourhood and drops or tears of a viscid white gum flow from various parts of these vegetable hillocks. They stand apart from one another, varying from 2–4 feet in height, and though often hemispherical, are, at times, much broader than high, and even eight or ten feet long. The very old ones begin to decay near the ground, where a crumbling away commences all round, and having but a narrow attachment, they resemble immense balls or spheres laid upon the earth. Upon close examination, each mass is found to be herbaceous throughout, the outer coat formed of innumerable little shoots rising to the same height, covered with imbricating leaves, and so densely packed that it is even difficult to cut out a portion with a knife, while the surface is of such uniformity that lichens sometimes spread over it, and other plants vegetate on its surface in the occasional holes or decayed places. If, at a very early period, a young plant of the *Bolax* be removed and examined, the origin of these great balls may be traced; for each of them, of whatever size, is the product of a single seed, and the result of many, perhaps hundreds of years' growth. In a young state the plant consists of a very long slender perpendicular root, like a whip-lash, that penetrates the soil. At its summit are borne two or three small, branching stems, each densely covered for its whole length with sheathing leaves. As the individual increases in size, the branches divide more and more, radiating regularly from the rooting centre, instead of prolonging rapidly; these send out lateral short shoots from their apices, and in such numbers that the mass is rendered very dense, and by the time the plant has gained the diameter of a foot, it is quite smooth and convex on the surface. The solitary root has become evidently insufficient for the wants of the mass of individuals, which are nourished by fibrous radicles, proceeding from below the leaves, and deriving nutriment from the quantity of vegetable matter which the decayed foliage of the lower part of the stems and older branches affords.

The *B. globaria* yields a gum, which is white when oozing from the wounded stems and leaves, but soon turns red-brown on drying; it has been used as an application to cuts and other lesions with apparent effect, and for the cure of Gonorrhœa, with more doubtful success.

From Mr. Webster's account it is abundant in Staten Land, and is, I believe, also found in perfection in Patagônia. In Hermite Island it never assumes the form it does in the Falklands.

3. HUANACA, *Cav.*

1. HUANACA *Cavanillesii*, DC.; caule scapiformi, foliis omnibus radicalibus longe petiolatis palmatim 7–8-sectis segmentis anguste linearibus acutis integris trifidisve petiolo basi in vaginam ciliatam dilatato, caule seu scapo erecto simplici striato apice umbellam 3-radiatam gerente, foliolis involucralibus tripartitis basi ciliatis, umbellulis multi-radiatis lateralibus elongatis diutius florentibus intermedio sessili, floribus pedicellatis, fructu ovato, mericarpiis dorso valde compressis concavis lateraliter 3-jugis. H. Cavanillesii, *DC. Prodr.* vol. iv. p. 81. *Poiret Encycl. Suppl.* vol. iii. p. 68. H. acaulis, *Cavanilles, Icon.* vol. vi. p. 18. t. 528. f. 2. Œnanthe Huanaca, *Spreng. Umbell. Spec.* p. 37. *et in Roem. et Schultes Syst. Veg.* vol. vi. p. 428. Spananthe Huanaca, *Lagasca Am. Nat.* vol. ii. p. 93.

HAB. Strait of Magalhaens; Cape Gregory, *Capt. King.*

Radix fusiformis, pro planta majuscula, 3-pollicaris. *Folia* longe petiolata; petiolo gracili, erecto, 2–4 unc. longo, basi in vaginam brevem latam ciliatam dilatato; laminæ segmentis $\frac{3}{4}$–1 unc. longis, sub 1 lin. latis, glaber-

Crantzia lineata, Nutt.

rimis v. sparse pilosis. *Caulis* scapiformis, folia vix duplo superans, teres, ad apicem tripartitam umbellas 3 simplices foliisque 2 gerens; foliis caulinis involucrum simulantibus trisectis, basi ciliatis. *Umbellæ* 2 laterales pedunculatæ, intermedia sessili. *Involucelli* foliola lineari-oblonga, subacuta, ciliata. *Pedicelli* umbellæ intermediæ elongati, ceteri breviusculi. *Flores* parvi, pauci, steriles. *Calycis* limbus breviter et obtuse 5-dentatus. *Petala* ovata, incurva, integra. *Fructus* ovatus, obtusus, sub 2 lin. longus, umbellæ intermediæ solummodo mihi notus. *Mericarpia* dorso concava, trijuga.

A very little known Patagonian plant, remarkable for the resemblance its almost leafless stem bears to a scape, which induced De Candolle to substitute the name of its first describer for that of *H. acaulis*. Assuming the view here taken to be correct, the branching of this plant is trichotomous, for the three peduncles, bearing each a simple umbel, arise from one point, the terminal or central branch flowers first, and therefore cannot be considered as the intermediate division of a compound umbel, in which the external rays always open before those nearer the axis: the structure of the inflorescence is similar to *Astrantia* (vid. Brown in Linn. Trans. vol. xi. p. 92).

The *Huanaca Cavanillesii* was first discovered at Port Desire by Née, who accompanied the Spanish voyager Malaspinas; and again by Mr. Darwin in the same locality.

4. APIUM, *L.*

1. Apium *graveolens*, Linn. *Sp. Pl.* n. 369. *DC. Prodr.* vol. iv. p. 101. *Gaud. in Ann. Sc. Nat.* vol. v. p. 105. *et in Freyc. Voy. Bot.* p. 135. *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 613. A. australe, *Pet. Thouars Fl. Ins. Trist. d'Acun.* p. 43. *Carmichael in Linn. Soc. Trans.* vol. xii. p. 506. A. prostratum, *Labill. Nov. Holl.* vol. i. p. 76. t. 103. *Vent. Hort. Malm.* t. 81. A. Antarcticum, *Banks et Sol. MSS. in Mus. Banks. cum icone.* Petroselinum prostratum, *DC. Prodr.* vol. iv. p. 102.

Hab. South Chili, Tierra del Fuego and the Falkland Islands; abundant on the shores of the latter: also in Tristan d'Acunha.

Apparently our common Celery, and even more abundant in the countries enumerated above, than in Europe. Except its often assuming a prostrate habit in the Antarctic regions, I perceive no external difference from the northern state of the plant; its properties are, however, very unlike, for the wild Antarctic specimens are always mild and wholesome, insomuch that the officers and crews of the Expedition made constant use of it, both raw and boiled like spinach. This absence of all injurious or even disagreeable properties may perhaps be owing, in some degree, to the want of the direct rays of the sun, which is seldom bright and clear, and often invisible for many days in the height of summer in these far southern regions. If this be so, we have a natural cause producing the same results which the skill of the gardener effects in our more favoured climate.

The *Apium graveolens* is also a native of Tasmania and the Cape of Good Hope..

5. CRANTZIA, *Nutt.*

1. Crantzia *lineata*, Nuttall, *Gen. Plant. Am.* vol. i. p. 177. *DC. Prodr.* vol. iv. p. 70. *Torr. et Gray, Fl. Am. Bor.* vol. ii. p. 600. C. attenuata, *Hook. et Arn. in Bot. Miscell.* vol. iv. p. 346. Hydrocotyle lineata, *Mich. Fl.* vol. i. p. 162. *Richard, Monogr. Hydr.* p. 77. f. 38. H. Chinensis, *Spreng. in Roem. et Schultes Syst. Veg.* vol. vi. p. 355. Elatine, foliis oppositis, *Gronov. Virgin.* p. 62. (Tab. C.)

Hab. Falkland Islands; abundant near the streams communicating between fresh-water lagoons and the sea, generally buried in gravel.

I have no hesitation in referring this plant to the tribe *Sesselineæ* of Koch, where it ranks naturally between

Ottoa, H. B. K., and *Œnanthe*, Lamk.; indeed it is to the latter genus alone that the present is allied in the fistulose leaves, while it resembles the former in the septate structure of the foliage, and has other points of affinity in the rank smell and taste, aquatic habit, vittate mericarps, and the longitudinal ridge in front of the seed itself.

The Falkland Island specimens are very constant in the form of their leaves; those from the Plate River, on the other hand, are exceedingly variable both in size and foliage, the latter sometimes measuring six inches long and expanding into a plane, linear-lanceolate, obtuse lamina.

In both Americas the *Orantsia* is confined to the east coast; in the northern hemisphere ranging from 30° to 42°, and in the south from 35° to 52°.

Plate C. *Fig.* 1, portion of a leaf; *fig.* 2, a flower; *fig.* 3, petal; *fig.* 4, ovarium and styles; *fig.* 5, ripe fruit; *fig.* 6, transverse section of the same:—all *magnified*.

6. OREOMYRRHIS, *Endl.*

1. Oreomyrrhis *Andicola*, Endlicher. Caldasia Andicola, *Lagasca in DC. Mém.* p. 5. t. 2. *DC. Prodr.* vol. iv. p. 229. Myrrhis Andicola, *Humb. Bonpl. et Kunth, Nov. Gen. et Sp. Plant. Am.* vol. v. p. 13. t. 419. Azorella daucoides, *D'Urv. Mém. Soc. Linn. Paris*, vol. iv. p. 613. *Gaud. in Freyc. Voy. Bot.* p. 135. *DC. Prodr.* vol. iv. p. 77. (Tab. CI.)

Hab. Falkland Islands; in grassy places, abundant; *D'Urville, J. D. H.*

This, which is rather a variable plant, appears to be altogether identical with that gathered on the Andes by Humboldt and Bonpland, and more lately by Linden, near the snow line on Orizaba, in Mexico, by Goudot in New Grenada, at the limit of perpetual snow, by Professor Jameson at an altitude of 14,700 feet, on the Andes of Quito, and by Mr. M'Lean in Peru: for I refer all the *Caldasiæ* of these collectors to the present species, which there, as in the Falklands, has the leaves more or less cut, their segments crowded or lax, and all the parts copiously hairy or nearly smooth. It is very singular that it should not have been hitherto found at any intermediate station between Peru and the Falkland Islands, where it grows as constantly at the level of the sea, as at the limit of eternal snow on the Cordillera under the line. Assuming 15,000 feet to be its station under the equator, it has descended that number of feet in 52 degrees, or nearly 300 feet for every degree of latitude. The labours of Humboldt and of Professor Jameson, who have determined with great accuracy the zones of elevation which many plants of the Cordillera affect, are daily proving of increased value; and now that many of the same species are found at far less elevations and even on the shores of the ocean in lower latitudes, they afford most essential data for comparing the effects of latitude with those of elevation upon vegetation, which, from various causes, are not what the difference of temperature would indicate. Thus, the parallel of the Straits of Magalhaens appears to be the point where plants, inhabiting the altitude of 15,000 feet under the equator, meet the ocean; but the snow-line itself is there 4,000 feet higher and does not descend to that level for eight degrees further south.

Plate CI. (under the name of *Caldasia daucoides*, Hook. fil.) *Fig.* 1, umbel; *fig.* 2, a flower; *fig.* 3, petal; *fig.* 4, upper portion of germen, showing the stylopodia; *fig.* 5, ripe fruit; *fig.* 6, transverse section of the same:—all *magnified*.

7. OSMORHIZA, *Raf.*

1. Osmorhiza *Chilensis*, Hook. et Arn., *Bot. Beechey Voy.* p. 26, *et in Bot. Miscel.* vol. iii. p. 355. O. Berterii, *DC. Prodr.* vol. iv. p. 232. Schudia Chilensis, *Molin. Chili*, p. 125. Scandix clavata, *Banks et Sol. MSS. Mus. Banks. cum icone.* Chærophyllum Chilense, *Poir. Encycl.* vol. v. p. 105.

Hab. Tierra del Fuego, *Commerson*; Good Success Bay, *Banks and Solander.*

Also gathered by Capt. King, at Cape Fairweather, on the east coast of Patagonia; and it is a native of Chili.

Fitch del. et lith.

Caldasia daucoides, Hook fil

Printed by Reeve Brothers

Myzodendron punctulatum, Bank et Sol

J.D. Hooker del.
W. Fitch, lith.

Reeve Brothers imp.

Myzodendron punctulatum. Banks & Sol.

J.D.Hooker, delt
W.Fitch, lithog.

Reeve Brothers imp.

Myzodendron brachystachyum. D.C.

XXII. LORANTHACEÆ. *Don.*

1. MYZODENDRON, *Banks et Sol.*

Char. Gen. Dioicum. *Flores* parvi, amentacei, spicati v. racemosi. Fl. Masc. *Perianthium* 0. *Stamina* 2–3, ad apicem pedicelli circa glandulam depressam disposita; *antheræ* ovoideæ, uniloculares, v. septo incompleto spurie biloculares, rima apicali dehiscentes. Fl. Fem. *Calycis tubus* ovario adhærens. *Corolla* nulla. *Ovarium* trigonum, angulis longitudinaliter bilamellosis, rimis intus setam setasve pluribus foventibus, uniloculare, tri-ovulatum, disco angusto inconspicuo coronatum; *stylus* brevis, crassus, in ramos 3 breves obtusos apice papillosos fissus; *ovula* nuda, e apice columnæ liberæ centralis subpendula; *funiculus* brevissimus. *Fructus* submembranaceus, setis 3 elongatis auctus, rarius nudus, anonospermus. *Semen* ex apice columnæ parietibus loculi appressæ pendulum; *testa* nulla?; *albumen* subcarnosum, teres v. sulcatum; *embryo* hilo proximus, membrana tenui indutus; *radicula* supera, in discum dilatata v. capitata, exserta; *cotyledones* parvæ, conferruminatæ, intus cavæ, plumulam diphyllam foventes.—Herbæ *v. potius* suffrutices Antarcticæ *et* Chilenses *pleræque more* Visci *ramis generis* Fagi *parasiticæ*. Rami *teretes, alterni, articulati, aã nodos vaginati*. Flores *minimi*. Fructus *e maxima copia florum plumosorum conspicui*.

Subgen. *Gymnophyton*; aphyllum, bracteæ squamæformes, flores masculi in axillis bractearum solitarii, feminei bini; stamina 2.

1. Myzodendron *punctulatum*, Banks et Sol.; aphyllum, ramis teretibus punctis prominulis apice depressis obsitis, floribus masculis in amenta dispositis. (Tab. CII. CIV. et CVI.) M. punctulatum, *Banks et Sol. MSS. in Mus. Banks. cum icone*. Misodendrum, *DC. Coll. Mém.* vol. vi. t. 11 et 12, *Prodr.* vol. iv. p. 286. *Brown in Trans. Linn. Soc.* vol. xix. p. 232. *in note*. Viscum flavescens, *Commerson, MSS.*

Hab. Tierra del Fuego and South Chili, as far North as Valdivia; abundant on various species of *Fagus*; *Commerson, Banks and Solander* and all future voyagers.

Suffrutex ramosissimus, bipedalis. *Caulis* lignosus, basi dilatatus, crassitie digiti minoris, cortice pallide fusco. *Rami ramulique* e vagina brevi cupuleformi orti, ultimi diametro pennæ corvinæ, omnes cortice flavo-virescente siccitate aurantiaco tecti, tuberculis parvis apice depressis stomate instructis rugulosi. *Inflorescentia* ramos terminales amentacea. *Amenta* alterna, suberecta, v. divaricata, cylindracea, superiora vacua. *Squamæ* seu *bracteæ* dense imbricatæ, late orbiculatæ, concavæ, marginibus scariosis. *Flores masculi* sobitarii, pedicellati; pediccllo gradatim incrassato, carvato, ¼ lin. longo, glandulam depressam (rudimentum ovarii) antheraque 2 ad apicem gerente. *Antheræ* divaricatæ, minimæ, cellulosæ, rima parva apicali sursum spectante dehiscentes, uniloculares, loculo intus columna compressa erecta aucto. *Pollen* globosum, echinulatum, stramineum. *Fl. feminei* in squamis bini, collaterales, sessiles, vix ¼ lin. longi, anguste oblongi, trigoni. *Achænium* membranaceum; setis elongatis achænio longioribus plumosis, pilis apice capitellatis. *Semen* anguste elliptico-oblongum, loculum fere implens, ex apice columnæ centralis compressæ pendulum; funiculo brevissimo, basi ovulis 2 sterilibus suffulto. *Albumen* ut videtur omnino nudum. *Embryo* membrana tenui ex apice funiculi continua inclusus, extremitate superiore albuminis fere immersus; parte radiculari dilatato, exserto; cotyledonari tereti, cylindraceo, apice breviter fistuloso, indiviso.

* As the genus *Myzodendron* is perhaps the most interesting, in a structural point of view, of any collected during the progress of the Antarctic Expedition, I shall offer some remarks upon the peculiarities of this and the following species.

The process, by which the germinating embryo attaches itself to, and derives sustenance from the Beeches

infested by this genus, will be described under *M. brachystachyum*, where only I have been able to watch that operation. The present species follows the same course, I presume, judging from the appearance of a fully established parasite.

The anatomy of the stem and branches of *M. punctulatum* not only differs widely from that of *M. brachystachyum*, but of most other Dicotyledonous plants; its axis being wholly occupied by very dense fibres apparently of woody tissue, and presenting there no trace of the cellular tissue, which is constantly present in such plants as increase by annual layers. The bark of the young branches is thick and spongy and a transverse section presents the following structure. 1st. A very delicate but firm cuticle, striated externally with lines of extreme tenuity. 2nd. Immediately beneath this is a cellular tissue forming the epiphlœum. 3rd. A series of cavities occupy the circumference of the bark; they are what have been called in other plants respiratory cavities, and correspond each to one of the tubercles on the surface of the stem; the cuticle is depressed immediately over the centre, where a very evident stoma is situated. 4th. The cellular tissue forming the mesophlœum is hexagonal, thick-sided, and very often full of a green chromule. I have seen no raphides in any of the species. 5th. The liber contains a series of isolated bundles of delicate fibres (PLATE CVII. *f.* 9. *a.*) frequently, for some part of their length, protected by cells of great density, such as may be seen in the *Lime* and Antarctic *Fagi*. The proportion of fibrous tissue to the thickness of the bark is very small, and the fibres composing it exceedingly slender. Between this and the scalariform tissue lies a very thick layer of loose hexagonal cellular tissue, formed of membranous utricles, which are discoloured and compressed immediately around the annual layers. 6th. The greater portion of the old stem, all that part which, in Dicotyledonous wood, is usually occupied by pleurenchyma, is here wholly, or nearly, formed of elongated variously marked tubes, of almost equal diameter, they are white and diaphanous, dotted, ringed, transversely barred, or contain a spiral vessel, more or less broken (PLATE CVII. *f.* 8, 9 and 10, *c.*). I have not observed simple or thick-sided tubes of pleurenchyma, true tracheæ, or bothrenchyma, either in the inner portion of each annual layer, or in the usual position of the medullary sheath. 7th. The axis of the stem is formed wholly of a dense tissue of woody fibres (PLATE CVII. *figs.* 8, 9 and 10 *b.*) the tubes all very small, inseparable, even after long maceration, and their walls so thick that it is difficult to trace the dark longitudinal line which indicates their cavity which contains granules, though a dot in the centre of the transverse section of each fibre is very evident. This axis suffers no change after the first year's growth, and at that period may be seen to project wedge-shaped plates in the manner of medullary rays, into the scalariform tissue which it hardly divides.

The stems of this plant are, though hard in texture, very brittle, especially when dry, owing partly no doubt, to the fragile nature of the scalariform tissue, and probably still more to the very small quantity of parenchyma and the axis being formed of a denser substance than any other part.

The ramification of this plant is highly peculiar, and uniformly takes place in the following manner. Each ultimate branch, when fully formed, PLATE CVII. bis, *f.* 1, (and the plant itself, when consisting of a single unbranched stem) elongates no further in any succeeding year, but gives origin, towards its extremity, to five or six lateral amenta; these arise from the centre of a depression, bounded by a low cup-shaped sheath (PLATE CIV. *f.* 1). All but a few of the upper of these amenta are floriferous; they fall away after they have performed their functions, leaving a cicatrix on the ramulus, very visible even on the oldest stems, below every articulation. The upper empty amenta, however, (PLATE CVII. *bis*, *f.* 1, *a*), elongate during the autumn, one or both of them, causing the ramification to be frequently either alternate or dichotomous; the bractеæ are separated during this elongation, become recurved,* fall off and leave a naked newly-formed branch (PLATE CVII. *bis*, *f. b.*), fully developed by the month of September; toward the upper part of this, other amenta are formed and the process is repeated. The apex of the originally ultimate branch, now a stem, is reduced to a mere point (*e*), always discernible close to the articulation even of the oldest stems, though often very inconspicuous. Occasionally, three amenta are developed into branches, but this effecting a trichotomous ramification, is rare. The articulation of the stem in *Mysodendron* is therefore of a

* As figured in De Candolle's Coll. Mém.; vi. t. 11. f. A and B.

J. D. Hooker, del.
W. Fitch, lithog.

Reeve Brothers, imp.

Figs. 1–6. Myzodendron brachystachyum, DC.
7–9. Myzodendron punctulatum, B. & S.
10–12. Fagus Forsteri, Hook.

very different nature from what occurs in plants, whose joints indicate an interruption of continuity in a rectilinear organ, as the stems of *Equisetum*, *Casuarina*, or *Salicornia*, or from those which increase by new matter being developed at certain intervals from the apex of the axis of growth, as the trunk of a Palm. In *Viscum album*, the ramification is truly dichotomous, each internode giving off two opposite ramuli from its apex, between which is a third undeveloped bud; and in *V. salicornioides* and *Arceutholobium oxycedri* the branching is trichotomous, from both the lateral and terminal branches being developed. Another modification is observable in a singular new genus of *Loranthaceæ*, *Eubrachion** mihi, (*Viscum ambiguum*, H. et A.). The ultimate ramuli of this plant are jointed on the stem and appear not to ramify further, but to bear amenta similar to the bracteate spikes of *M. punctulatum*, all of which are fertile and caducous, the ramulus elongating and producing year by year new amenta, as the old ones drop away.

The axis of the stem and branches of *M. punctulatum* is remarkably eccentric, the greater quantity of scalariform tissue being deposited on the under side of these organs, a circumstance arising from the horizontal direction the whole plant assumes. An analogous eccentricity in the position of the medulla in the horizontal branches of coniferous trees is very evident, though not so conspicuous, in other woody plants whose stems are as slender as those of *Myzodendron*. The truly amentaceous inflorescence of this plant is common also to *Antidaphne*, *Eubrachion*, *Lepeostegeres*, Blume, *Tupeia* and others of its congeners, if examined at an early stage. The male flowers are abundant, and the females much rarer in Hermite Island, this preponderance of males was also very marked in the *M. brachystachyum*.

Mr. Brown † first observed the singular position of the stomata in this species, which are placed one on the apex of each tubercle of the stem, and communicate with the cavity, or chamber beneath, the respiratory cavity of some authors. The cells of which the cuticle is composed are so completely incorporated into a uniform integument, that the curved utricles, which bound the mouth of the stoma in most plants, are here hardly apparent, though it is to their presence that the ridge (PLATE CVII. *bis*, *f.* 6, *a*) is due. The aperture itself, as seen in *f.* 5 and 6 of the same Plate, is constricted in the middle, somewhat in the form of an hour-glass, but an opening is generally, perhaps always, left between the adjacent edges of this constriction or diaphragm. The stoma thus expands both outwardly and inwardly into a sort of cup, the outer of which is frequently filled with an opaque mass, and the chambers beneath traversed by filaments of a viscid substance stretching from one wall to the other (*f.* 5). In the external cavity, when empty, parallel concentric lines may be observed, indicating the compound nature of the walls of the aperture. These stomata are abundant on all surfaces of the young stems and branches, but only on the lower surface of the older and horizontal stems.

MALE FLOWERS. These are of the most simple structure, consisting of a solitary curved subclavate peduncle in the axil of each bractea, bearing at its apex a large broad depressed gland, on each side of which an anther is seated, (PLATE CLV. *f.* 3, and 4). There are no traces of a floral envelope. The anther is ovoid, one-celled, opening by a small transverse slit at the apex, and containing a membranous columella, which is the remaining unelaborated tissue from which the pollen is formed, the indication of the anther being originally bilocular, as may

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* EUBRACHION, Nov. Gen. *Inflorescentia* amentacea. *Amenta* hermaphrodita, flores compressi, perianthio trifido segmento dorsali minore. FL. MASC. *Stamina* 3, segmentis perianthii oppositis, filamentis brevissimis, antheris compressis latis bilocularibus. FL. FŒM. *Ovarium* inferum compressum, disco epigyno latiusculo; stylo brevissimo, stigmate simplici. *Fructus* ovato-globosus, compressus, carnosus, sarcocarpio viscoso supra loculum posito, endocarpio subcrustaceo superne aperto, embryone teretí, cotyledonibus albumine late discifórmi immersis.

E. Arnottii. Viscum ambiguum, *Hook. et Arn. in Bot. Misc.* vol. iii. p. 356.

HAB. Uraguay; *Tweedie*.

† Prodromus Floræ Nov. Holl. Supplementum, sub. *Banksia*, p. 35.

be seen on examining a very young anther. The tissue is peculiar and wholly cellular, except just at the base of the columella, whence some spiral vessels descend through the peduncle. A longitudinal section shows the walls of the anther to be remarkably stout and formed of two layers of cells (PLATE CIV. *f.* 5 and 6); the outer of these are thick-sided, rounded or hexagonal utricles, often filled with a yellow chromule (PLATE CIV. *f.* 6 and 7); the inner on the contrary, are very slender, prismatic, thin-sided cells, densely packed together and radiating from the inner wall of the anther which they line with their bases, and which has no further membrane intervening between these prismatic cells and the pollen. The latter is yellow, globose, and echinulate, like that of other *Loranthaceæ*.

The gland, on each side of which the anthers are seated, indicates the position of the undeveloped ovarium in the male flowers; it is very conspicuous in all the species, and in *Antidaphne*, Pœpp., which, in this respect, does not differ from *Myzodendron*, although its author* has described the filaments as calycine pieces, antheriferous at the apex and the three-lobed gland as a corolla. In *Tupeia Antarctica*, again, where the segments of the perianth are evidently articulated on the top of the pedicel, the male flowers bear an almost imperceptible prominence in their centre. In *Eubrachion* the rudimentary ovarium, in the centre of the male flower, is much more fully formed.

In some respects the male flower of this genus resembles that of a species of *Gnetum*, where a solitary filament, similar to the peduncle of *Myzodendron*, arises from a sheathing bract and bears at its apex two collateral adnate cells, opening by apical slits which are at right angles to the broad axis of the stamens, (as in *Lemna*), and contain a central free columella; and where a vascular bundle descends from the base of each anther down the filament. The terminal dehiscence is comparatively rare in one-celled anthers, though seen in *Krameria*, where the cells coalesce into one. The single-celled anther of *M. punctulatum* may be further compared with two of those composing the multilocular anther of *Viscum album*†, in each of which loculi there is one point from which the pollen-grains are developed; or to one half of the anther of most phænogamic plants, where the developement of the pollen takes place at two points‡ and in which a ridge is afterwards left in the cell, analogous to the columella in this genus. I much regret not having the opportunity of comparing this with the *Castrœa falcata*, St. Hil., a Brazilian plant, allied to *Viscum*, but having its pollen developed in the apex of the segments of the perianth.§ The spuriously one-celled anther of *Tupeia? incana* (*Viscum*, Hook. Ic. Plant. t. 73.) is of an entirely different nature. There the two original cells, which are, as in ordinary stamens collateral, open by lateral slits, which become confluent above. This is exactly what happens in *Callitriche* and many other plants.

I know of no plant exhibiting a structure in the inner cells of the walls of its anther similar to *Myzodendron*, except perhaps, the *Saprium Griffithsii*, Br., a transverse section of whose anther, given by Mr. Griffiths,‖ appears to present radiating prismatic cells. The outer layer, again, is a portion of the same cuticle surrounding other more cellular parts of the plant.

FEMALE FLOWERS. I have only seen the ovarium in Valdivian specimens, apparently of this species, gathered by Mr. Bridges; figured at Plate CIV. *f.* 9 and 10. They are sessile, in pairs, in the axil of each bractea. The calyx is adherent with the ovarium and terminates in a thickened ring forming an entire, very short limb immediately below the insertion of the style. It is trigonous, and at each angle is a slit, leading to a longitudinal canal that encloses a stout filament, or seta. This seta ascends from the base of the ovarium and gradually elongating, finally escapes from the cavity where it was lodged (PLATE CIV. *f.* 10); it is composed of elongated cells cohering by their viscidity. The ovarium is one-celled; the cavity minute and wholly filled by an erect short column, that bears

* Pœppig, Nov. Gen. et Sp. Plant. Per. et Chili, vol. ii. p. 70. t. 199.

† Vid. Decaisne Mém. sur le développement du Pollen &c., in Act. Acad. Roy. Bruss. vol. 13.

‡ Vid. Jussieu, Cours Elémentaire, p. 351.

§ Aug. St. Hilaire, Leçons de Botanique &c., p. 451.

‖ Linn. Soc. Trans. vol. 19. t. 34. figs. 4 and 6.

three obliquely pendulous naked ovules at its apex, these are lodged each in a pouch in the wall of the ovarium at first, but the cell gradually dilates, and leaves the column and ovules free, as represented at fig. 11 of Plate CIV. The ovules are cellular and entirely naked, without any markings on the surface.* In the depression at the apex of the ovarium, bounded by the almost obsolete limb of the calyx, is a very obscure depressed disc, from which projects a short stout style, terminating in three erect oblong stigmata, papillose externally. A transverse section of the young ovarium shews no distinction between the adherent calyx and ovarium; further then that, as it will afterwards appear, the fissures penetrate the calyx only, the sets they contain lying against the walls of the ovarium itself.

In its trigonous form, the ovarium of *Myzodendron* resembles that of one species of a new South American genus of *Loranthaceæ*, allied to *Tupeia*, which I have seen in fruit only and shall call *Lepidoceras*†, from the curious, deciduous membranous scale that terminates the leaf. The genus *Tupeia* itself has also a similar trigonous ovarium, but does not possess the ovuliferous free column, which is very evident in this genus. *T. Antarctica* has also a highly conspicuous superior four-partite perianth to the female flower, which being deciduous and only visible at a very early period, before the inflorescence quits its protecting scales, has escaped the notice of recent authors. M. Korthals‡ refers the *Viscum umbellatum* and *Reinwardtianum* of Blume, two Javanese plants, to *Tupeia*, from which Miquel§ suggests their separation. That they do constitute a distinct genus is extremely probable, because of the presence of bracts at the base of the female flower, and (if we may judge from the somewhat incomprehensible figure given by M. Korthals) by some other characters of the flower and fruit. Until, however, the true nature of the placentation of the original species of *Tupeia*‖ is known, and this is not described by the authors ¶ of the genus or any subsequent writer, its affinities cannot be fully determined. Korthals was the first to describe any plant of the Order *Loranthaceæ* to have a free central column in the ovarium, and pendulous ovules; but laying too much stress upon this character he removed the plants in which he observed it, together with the genus to which he referred them (with whose typical species he was unacquainted), to *Santalaceæ*. Mr. Brown,** who has long been conversant with the structure of *Myzodendron*, points out its relation to *Santalaceæ*. This affinity between *Santalaceæ* and *Loranthaceæ* is perhaps most obvious in *Myzodendron*, from the comparative facility with which its ovarium may be dissected, and the column and ovules removed, and it equally shews the relation

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* The position of the future embryo proves that these ovules must be anatropous, though I cannot perceive any sign of raphe, chalaza or foramen. The pollen-tube probably reaches the foramen through the walls of the pouch in which the ovulum is lodged at an early period.

† Of this I have seen two species, both imperfect. The genus may be recognised by its small leaves, each terminated by a broad deciduous scaly apex, and its solitary axillary female flowers whose perianth is deciduous.

1. L. *Kingii*; ramis ramulisque erectis hirto-pubescentibus, foliis breviter petiolatis ellipticis utrinque acutis, ovariis pedicellatis trigonis.

Hab. Chiloe, *Capt. King*.

2. L. *Dombeyi*; ramis ramulisque divaricatis horizontaliter patentibus puberulis, foliis sessilibus late obovatis obtusis, ovario fructuque ovato-globosis.

Hab. Peru, *Dombey* in *Herb. Mus. Paris*, et *Lindley*.

‡ Korthals, Over het geslacht *Tupeia*, &c. (published in Holland with no date).

§ Miquel in Linnæa, vol. xviii. p. 28.

‖ I am inclined to agree with M. Endlicher in considering *Viscum inconnu*, Hook. (Ic. Plant. t. 73), a species of *Tupeia*. Though differing in the bractеate female flowers and unilocular anthers, its perianth, and, I believe, the structure of the ovarium, are the same in both.

¶ Chamisso et Schlechtendahl, in Linnæa, vol. iii. p. 203.

** Brown on Rafflesia, &c., vid. Linn. Soc. Trans, vol. ix. p. 232 (in note).

all bear to *Olacineæ*, as was also first indicated by Mr. Brown* and afterwards well illustrated by M. Decaisne, after a comparison of the ovules of *Viscum album*,† with those of *Thesium*. The ripe fruit of *M. punctulatum* forms an achenium, which generally dehisces longitudinally and allows of the partial or complete exsertion of the seed; but I am not aware whether germination takes place by the embryo becoming thus excluded, or whether, as in the following species, the radicle protrudes at the apex of the fruit, pushing the disc and style before it. The feathery filaments (hereafter to be described) are not so long in this species as in the following, or probably as in any of its congeners, except the *M. imbricatum*,‡ Pœpp., of South Chili; they are plumose with long hairs, which are capitate at the apex. The walls of the pericarp are more membranous here than in the other species, and, when fully ripe, the calycine portion looks like three plates, attached longitudinally by part of their surface to the endocarp; the filaments being lodged in the spaces formed by their contiguous non-adherent portion (PLATE CIV. *f.* 16.). The stout central column of the ovarium is elongated in the fruit into a slender chord, pressed between the seed and walls of the cavity of the fruit, and resembles a funiculus; its edges are ragged from the rapid elongation of its substance. The true funiculus is extremely short, and bears at its base the two very minute unimpregnated ovules (PLATE CIV. *f.* 18 and 19). The seed is linear-oblong, narrow and obtuse at both extremities. The albumen is copious, formed of utricles that at first are readily separable; and though the outer ones adhere closely, they do not seem covered with any distinct testa; a cavity in the upper part contains the greater portion of the embryo, which is of very highly organized tissue, and the radicle which is not immersed in the albumen is covered with a membrane apparently continuous from the funiculus, which at an early period may be traced downwards, lining the cavity of the albumen (PLATE CIV. *f.* 19, where the membrane is represented as too thick in texture). At no time can I detect the lower portion of this membrane (first observed by Mr. Brown), except whilst the cells of the albumen are loosely held together and may be scraped by the knife from its surface, and then it appears homogenous and of a different texture from what covers the radicle, which is cellular (PLATE CIV. *f.* 20). The embryo is very small, the radicular extremity capitate, with a depression at the top; the cotyledonary terete, abrupt, slightly curved and fistulose at the apex: the cotyledons are consolidated and present no trace of any line of union. The tissue of the radicle differs materially from that of the cotyledons, which may be seen even before, but still more remarkably after, dissection (PLATE CIV. *f.* 20). The upper portion of the capitulum, above the upper margin of the cavity of the albumen, is composed of delicate filiform cells of considerable length, enclosed in a cellular cuticle of great tenuity. The lower half and terete cotyledonary portion consists of closely-packed oblong cells, projecting in the form of a cone towards the radicular end. This structure, somewhat modified, exists in *M. brachystachyum* (PLATE CV. *f.* 20 and 21), the tissue of the radicle being much more lax than that of the cotyledons. The peculiar functions of the radicle doubtless demand this highly organized structure, both for rapid elongation and for the sudden spread of the membrane by which the following, and probably all the species, are first attached to the bark whereon they grow. In the present, the true radicle which pierces the bark is probably the conical continuation of the cotyledonary portion.

The plumose pappi of the achenium afford one of the great peculiarities of this genus; of their function there can be no doubt, though their origin and true nature are not quite so evident. De Candolle,§ from an examination of very imperfect specimens, described them sufficiently accurately, as scales contained in the walls of the pericarp. Guillemin‖ also considers them to be pappiform appendices, contained in fissures of the achenia. Neither of these

* Brown, Prodromus Flor. Nov. Holl., p. 352.

† Decaisne, Sur le pollen et l'ovule du Gui. Act. Acad. Roy. de Bruxelles, vol, xiii.

‡ This species I have never seen, nor are either the figures or descriptions satisfactory, vid. Pœppig et Endlicher, Nov. Gen. et Sp. &c. vol. i. p. 2. t. 3.

§ De Candolle, sur la Famille des Loranthacées, p. 12.

‖ Pœppig and Endlicher, Nov. Gen. et Sp. Plant. Per. et Chili, vol. i. p. 1.

J. D. Hooker, del.
W. Fitch, lithog.

Reeve Brothers imp.

Myzodendron brachystachyum, D.C.

authors offers any explanation of their true nature. Pœppig* describes several species, and, trusting more to a theoretical opinion of their origin, than to a careful analysis of the parts, or the definitions of De Candolle and Guillemin, he misapprehends the structure of the ovarium, considering it to be a compound body, made up of three carpels combined, and of the plumose filaments, which are described in the generic character as Setæ hypogynæ alternating with the ovaria, and in the observations on the genus are doubtfully called Staminodia. Lastly, Endlicher† regards the single ovarium as compounded of six, enclosed in a three-parted involucre, three of them fertile and three sterile, the latter being the plumose filaments.

The female flower of *Myzodendron* consisting of a solitary ovarium, enclosed in the adherent tube of the calyx, it is evident that the plumose setæ must be a production of the calyx or ovarium. Their function and appearance resemble the pappus of *Compositæ*, and particularly of *Valeriana* in being only fully developed during the ripening of the seed. They cannot be compared with the four stout woody nerves of *Tupeia Antarctica*, which ascending from the pedicel, terminate in the sarcocarp of its berry in four sharp points that arch over an opening in the upper end of the endocarp of that plant, for the setæ of *Myzodendron* contain no spiral vessels, and the true nerves of the calyx, though very obscure, may be traced in some of the species, as in *M. brachystachyum*, where they appear alternating with the position of the setæ (PLATE CV. *f.* 11).

The tissue of which these setæ are composed, is identical with what forms the sarcocarp of *Tupeia* and *Viscum*, namely, elongated viscid cells of great tenuity filled with a glutinous matter; in most *Loranthaceæ* this tissue surrounds the endocarp and at an early period deliquesces into a homogenous viscid fluid, like that of *Viscum*. When looking over the plants of this order, in Dr. Lindley's herbarium, I remarked one‡ whose ripe pericarp had burst during pressure and emitted a cottony substance; that gentleman liberally gave me specimens for examination, which showed the sarcocarp to be intermediate in its nature between that of *Tupeia* and of *Myzodendron*, being feathery and neither so deliquescent as in the former, nor elaborated into such a peculiar organ as in the latter.

The elaboration of these setæ, from cellular tissue, cannot be regarded otherwise than a very singular phenomenon, and, so far as my observations serve, it appears that it is merely the result of a rapid elongation of cellular tissue. The viscid substance, then, in this genus, instead of surrounding the endocarp, is confined within three fissures, and there collected into a terete or compressed body, which, escaping from its confinement, rapidly elongates from the growth of the cells which compose it, more than from the addition of new matter. The plumose appearance is caused by the separation of some of the utricles, which diverge on all sides in the species in which the setæ are terete, or in their opposite margins when the latter are compressed. Of all the species, the setæ of *M. oblongifolium* are the longest, and there are various gradations in length and tenuity between them and those of *M. punctulatum*. The *M. linearifolium*,§ DC., has not only very long and slender filaments, but its whole endocarp is at times surrounded with a feathery substance, which is thus not, as in its congeners, confined in loculi: when placed in water this feathery substance deliquesces. In *M. imbricatum*, Pœpp., the fissures of the pericarp are, according to the author of that species, filled with undivided stout obtuse filaments, collected together at the base, and never exserted.

I need scarcely allude to the fact, that the function performed by the gluten of *Viscum* and the feathery setæ of *Myzodendron* is identical, though effected in a different way, and that it affords a singular instance of nature's employing the same means in a very dissimilar manner to the attainment of the same end. The viscid matter of

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* Guillemin in Delessert's Icones Selectæ, vol. iii. p. 47.

† Endlicher, Genera Plantarum, p. 800. n. 4681.

‡ *Lepidoceras Dombeyi*, vid. supra, p. 293.

§ A name which, without any assigned reason, has been altered to *lineare* in the *Nova Genera et Species Plant. Chil. et Peruv.*

the Misseltoe has been supposed to nourish the embryo during the first stage of germination; which may be the case; though from *Myzodendron* requiring no such adventitious assistance, it is more probable that it serves in both, merely as a means of attaching the seed to the plant it attacks. In most, or perhaps all *Loranthaceæ*, germination is continued up to a considerable period, before the albumen and pericarp are detached from the embryo. I have not seen its assertion in this species, which takes place, probably, as in *M. brachystachyum*, through the apex of the pericarp, and not through a lateral fissure. In many plants of the order, there is a special provision for this; for instance, in *Tupeia*, where the upper extremity of the endocarp is open, and where the nerves of the pericarp do not anastomose above; and in *Eubrachion*, where there is a similar foramen, opening into a cavity full of a viscid fluid, whence it seems likely that the radicular extremity in these two genera may carry out along with it some of this viscid matter, the better to secure its adhesion to a particular spot. Lastly, I shall allude to the cellular tissue of the radicular extremity of *M. brachystachyum* being formed of viscid elongated utricles, which I cannot distinguish from those composing the gluten of the sarcocarp of other *Loranthaceæ*, and would hence suggest that we have in one species of this genus, where no medium exists in the sarcocarp for attaching the radicle to the bark, a perfectly similar substance supplied by the radicle itself.

Mr. Brown, in his paper on *Rafflesia* in the 19th volume of the *Linnean Transactions* so often alluded to, substitutes the original name of *Myzodendron*, given by Banks and Solander, for that of *Misodendrum*, which was probably inadvertently adopted by De Candolle. The latter author has also mistaken Staten Land in Fuegia, for Staten Island in the United States, and hence considered this to be a native of North as well as South America.

The yellow hue of *Myzodendron punctulatum* renders it a conspicuous object, even from a considerable distance. It may be recognized, when coasting along the shores of Fuegia, from its contrasting so strongly with the otherwise lurid colour of the dusky forests. It grows indifferently upon the evergreen or deciduous-leaved Beech.

PLATE CII. An entire male plant of *M. punctulatum*, and a portion of a female plant with ripe fruit;—both of the *natural size*.

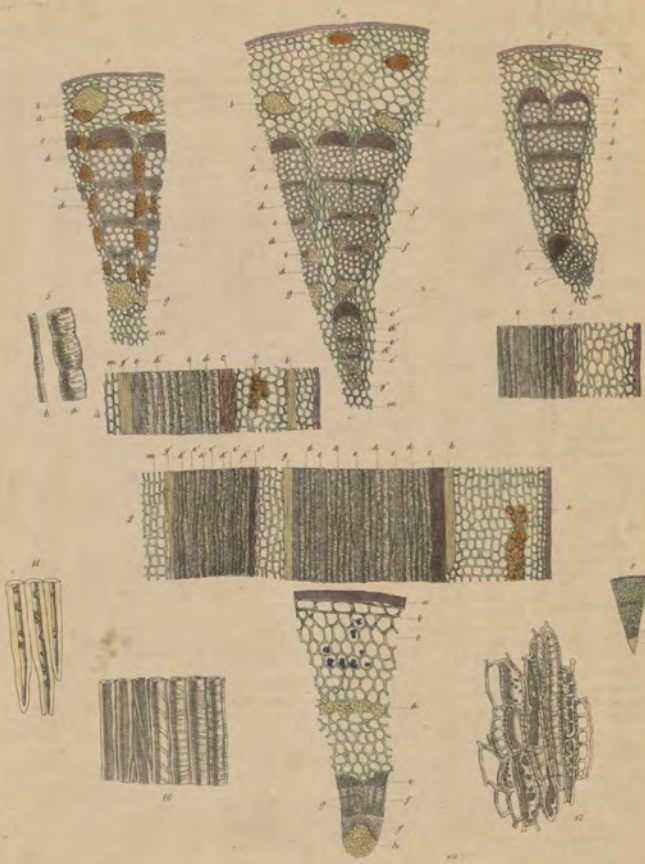
PLATE CIV. *Fig.* 1, portion of terminal ramulus with one of the upper neuter amenta or leaf-buds; *fig.* 2, a male amentum or flower-bearing ramulus; *fig.* 3, a scale from the same, containing a male flower; *fig.* 4, male flower, with its pedicel, removed; *fig.* 5, vertical section of an anther and sessile gland, shewing the epidermis of stout cells, the prismatic cells lining the loculus, the pollen, and compressed columella; *fig.* 6, a transverse section of the same; *fig.* 7, a portion of the walls of the anther; *fig.* 8, pollen, one grain immature, with tetrangular nucleus; *fig.* 9, female amentum (from Mr. Bridges' Valdivian specimen); *fig.* 10, an ovarium, taken from the same; *fig.* 11, vertical section of the same, shewing the young setæ lodged in the slits of the pericarp, the central free column and three ovules; *fig.* 12, column and ovules removed; *fig.* 13, female amentum, with ripe achenia; *fig.* 14 and 15, front and back view of ripe achenium, exhibiting the attachment of the three calycine pieces forming the epicarp, and the three setæ lodged in the spaces between their contiguous margins and the endocarp; *fig.* 16, transverse section of an achenium shewing the albumen of the seed cut across, and the column forced to one side; *fig.* 17, vertical section of the same, shewing the column reduced to a filament, bearing two unimpregnated ovules and a ripe seed at its apex; *fig.* 18, column, unimpregnated ovules and ripe seed; *fig.* 19, vertical section of seed not fully ripe, shewing the albumen, formed of utricles, each with a nucleus, the sac (its walls are represented of too great density) continuous with the funiculus covering the embryo and passing between the latter and the albumen; *fig.* 20, embryo, removed from a ripe seed, having the upper cellular portion of its investing sac placed above it; *fig.* 21, vertical section of the embryo, shewing the cellular, upper, or radicular extremity, the firmer cotyledonary portion, sending a conical projection into the cellular portion, and the fistulose consolidated cotyledons;—all more or less *highly magnified*.

PLATE CVII. *Fig.* 7, section of a middle-aged specimen of *M. punctulatum*, shewing its union with the Beech, which in this instance is exceedingly close; *fig.* 8, horizontal slice of a first year's ramulus of the same; immediately beneath the striated cuticle is a row of cells, the first of them forming the epiphlœum, within these are cavities corresponding to the tubercles on the stem, the whole tissue between these and the letter *c*, is the bark, traversed

J.D.Hooker del.
W.Fitch lithog.

Reeve imp.

1-6. Myzodendron punctulatum. B & S.
7-12. ..... brachystachyum. D C.



T. D. Hooker del. et lith.

Basire imp.

1–2. Myzodendron brachystachyum, p.c. 6–7. Myzodendron quadriflorum, p.c.
3–5. ——— linearifolium, p.c. 8–12. ——— punctulatum, s.a.s.

at letter *a* by the fibrous tissue of the liber; the letter *c* points to the scalariform tissue, deposited in triangular wedges of a pale colour and the dark triangular mark beyond it is the albumum: the letter *b* indicates the axis of the stem, here formed of woody fibres, with no medulla or scalariform tissue intermixed; *fig.* 9, a vertical section of the same, the letters corresponding; *fig.* 10, more highly magnified view of a portion of the axis (*b*), the scalariform tissue (*c*), and the cellular tissue of the liber; all the above, except *fig.* 7, are *very highly magnified.*

PLATE CVII. *bis*, *Fig.* 1, mode of branching of *M. punctulatum*, of the *natural size*; *a*, newly formed ramuli, *b*, flowering amenta about to fall away; *c*, apex of the stem; *fig.* 2, portion of the stem showing the position of the stomata; *fig.* 3, stoma; *fig.* 4, the same viewed from the cavity it corresponds to; *fig.* 5, transverse section of cavity and stoma, the portion above the diaphragm filled with an opaque substance; *fig.* 6, another stoma with its aperture unobstructed; all *highly magnified.*

PLATE CVII. *ter*, *Fig.* 8, section of a branch in the first year of its growth, shewing (*b*) the vessels of the liber; *c*, the albumum; *d*, the pleurenchyma deposited in the axis; *fig.* 9, portion of a section of the stem from a branch three years old; *a*, the cuticle; *b*, the epiphlœum; *c*, mesophlœum; *d*, vessels of the liber; *e*, albumum; *f*, layers of wood; *g*, rays of pleurenchyma; *h*, pleurenchyma deposited in the axis of the plant; *fig.* 10, pleurenchyma spirally marked and scalariform vessels from the same; *fig.* 11, longitudinal section of tubes of pleurenchyma from the axis; *fig.* 12, portion of very old wood:—all very highly *magnified.*

Subgen. II. Eumyzodendron; rami foliosi; bracteæ nullæ; flores racemosi v. secus ramos solitarii bini quaternive, stamina 3.

2. MYZODENDRON *brachystachyum*, DC.; ramis teretibus lævibus, ramulis griseo-puberulis, foliis anguste oblongis lineari-oblongisve subenervibus, floribus in racemos axillares basi folio suffultis dispositis masculis triandris setis plumosis pericarpio 6-tuplo longioribus. M. brachystachyum, *DC. Coll. Mém.* VI. t. 12. f. 1. *Prodr.* vol. iv. p. 286. M. planifolium, *Banks et Sol. MSS. in Bibl. Banks. cum icone.*

HAB. South Chili and Tierra del Fuego; *Banks and Solander* and all succeeding voyagers.

Suffrutex ramosus, bipedalis, ramulis junioribus tantum foliosis. *Caulis* brevis, basi dilatatus, alterne patentim ramosus. *Rami* divaricati, teretes, articulati, ad nodos vaginati et paulo constricti, internodiis uncialibus crassitie pennæ olorinæ; cortice lævi, fusco-brunneo, griseo-punctulato, punctis rimosis, hic illic e lapsu ramulorum florentium cicatricato; vaginis bilabiatis. *Folia* caulina in ramulis propriis demum elongatis disposita, subfasciculata, plana, obtusa v. subacuta, nervis 3-5 valde obscuris percursa, lucide viridia, utrinque stomatibus plurimis instructa. *Inflorescentia* ramulis foliosis post anthesin deciduis disposita, racemosa. *Racemi* basi folio obovato obtuso apice piloso suffulti, breves, densiflori; floribus breviter pedicellatis. FLORES MASC. *Stamina* 3, erecto-patentia, ad apicem pedicelli circa glandulam depressam disposita; filamento crasso, tereti, curvato, cum anthera parva *M. punctulato* simillima continuo. FLORES FŒM. *Ovarium* ut in præcedente sed disco epigyno manifesto, stylo paulo longiore pedicelloque brevi pubescente instructum. *Fructus* ovatus, disco apice concavo terminatus, trigonus, obscure sulcatus, setis plumosis fructu sextuplo longioribus, pilis apice attenuatis. *Columna* seminifera latiuscula, plana, compressa, parieti loculi appressa. *Semen* loculum ½ implens, pendulum, globoso-ovoideum, 3–4-sulcatum. *Albumen* carnosum; embryo parte superiore albuminis semi-immersus, membrana tenui cum funiculo continuo inclusus; extremitate radiculari ultra albumen exserta, dilatata, concava; cotyledonari tereti, apice oblique truncata, obscure emarginata, intus cava.

The important and conspicuous characters that separate this and the following from the *M. punctulatum*, and which have induced me to subdivide the genus, are, the absence of tubercles on the stem and branches, the ramuli being foliaceous and not bracteate or scaly, the triandrous male flowers, the larger column in the ovarium, the deeply sulcate albumen, and especially the structure of the stem, which differs so remarkably in the two subgenera, that no one, from an examination of their wood alone, would hesitate in pronouncing them to be plants widely separated in a Natural System.

Anatomy of the stem. A branch of this species, after attaining the age of two years and upwards, consists principally of a soft white cellular tissue, occupying the axis of the plant and communicating with the thick bark by means of broad medullary rays. The latter are separated by woody plates, disposed in two concentric series, and formed almost entirely of scalariform tissue with sometimes pleurenchyma. *Cuticle.* This is very stout in texture: in a first developed branch it consists of only one row of small cells (PLATE CVII. *bis*, *f.* 11) these must be rapidly added to, for after another year the cuticle of the same branch is of much greater density and formed of many series of cells, much blended together, though not so completely as to assume the appearance of a homogeneous tissue without any trace of cellularity, which it afterwards attains (PLATE CVII. *fig.* 4, 5, and 6). The cuticle is devoid of stomata commonly so called, but furnished with numerous longitudinal prominences, each marked by a fissure. A transverse section of one of these is given at PLATE CVII. *f.* 4, where the appearance is as of several layers of cuticle superimposed and forming the prominence, becoming cellular towards the centre, and depressed, pushing the subjacent epiphlœum before it. There is no actual stoma or communication between the external atmosphere and tissue of the bark, further than what may be supposed to be afforded by cellular tissue, which is a rapid conductor of moisture. These are very evident in the branches of the second year, no doubt answer to stomata, whether performing the same functions or no, and are an instance either of the cuticle retaining its originally cellular organization at the point where they occur, or reverting to that structure.

Bark. This is composed almost entirely of a mass of cellular tissue, shrinking much when the stem is dry. The epiphlœum is formed of several rows of transversely elongated thick-walled cells, it occasionally contains air-cavities, but these are not so numerous or conspicuous as in *M. punctulatum*. The vessels of the liber are disposed about half way between the cuticle and wood, are often very inconspicuous and formed of scattered bundles of fibres (PLATE CVII. *f.* 5 and 6 *a*.) protected by very thick-walled cells, as in most, if not all, the *Loranthaceæ*, at other times they are in two series or variously disposed. This tissue does not appear to pass from one internode to another, but to be interrupted at each articulation, as M. Decaisne found to be the case in *Viscum*.* The parenchyma between the vessels of the liber and wood is often dense, sometimes but rarely these vessels are seen to be immediately in contact with the wood as at PLATE CVII. *f.* 5 and 6 *b*. *Wood.* Within the bark are arranged two concentric series of woody plates or wedges, these two series are separated by a zone of cellular substance, and are generally arranged with tolerable precision: besides these the pith of the plant is intruded upon by other wedges or bundles of vascular tissue, unsymmetrically disposed, one of them often occupying the axis itself. Each wedge or plate is composed principally of concentric layers of very large *vasa scalariformia*, becoming more densely packed and much smaller in diameter towards the axis of each layer, where they are almost invariably furnished with a spiral filament. Between the layers of the first three or five years there is generally deposited two bundles of pleurenchyma similar to that of the liber, one on each side (PLATE CVII. *ter*, *f.* 1. *f*) but between the more recent layers there intervenes only the more delicate vascular tissue (*f.* 1 and 2. *e*): as mentioned above, however, pleurenchyma is sometimes more copiously deposited between every layer, as at PLATE CVII. *f.* 5 and 6, *b*. The narrow portion of each wedge invariably rests on a mass of pleurenchyma (PLATE CVII. *ter*, *f.* 1. *g*,) deposited at the same time as the fibres of the liber *c*, that is during the first year, as in the common Misseltoe. The wedges of wood belonging to the second series are smaller than those of the first, but similarly formed in all respects, and consisting of as many layers, though the inner are very inconspicuous.

The pith consists of cellular tissue similar to that of the liber, and is very lax even in the older stems.

The transverse section of this stem, appears at first sight to differ very remarkably from that of most exogenous plants; this arises from the wood being deposited in two concentric series, separated by a broad zone of parenchyma, from the great breadth of the medullary rays, the irregular distribution of the fibres of the liber

* Decaisne, Mémoire sur le développement du Pollen &c. du Gui, in Act. Acad. Roy. de Bruxelles, p. 49.

which are sometimes biserial, and the disproportionate amount of scalariform tissue. The structure of *M. punctulatum* is however far more abnormal, fibres of pleurenchyma being deposited in the axis of the stem, thus replacing the pith, and forming very obsolete rays, and all future increment of the stem being effected by an addition of layers of variously marked scalariform tissue alone, as far as I have been able to observe.

Formation of wood. I shall next describe the course the vascular tissue pursues in the newly formed buds and branches, and thus attempt to explain the origin of the two series of woody plates which this species and *M. quadriflorum* DC. possess.

A transverse section of the stem of a flower- or leaf-bud made in the first year of its formation, (PLATE CVII. *bis*, *f.* 10 and 11), presents a mass of globular utricles, covered with a delicate cuticle (*a*) formed of one moniliform row of cells, and traversed by one series of twenty or thirty vascular bundles (*b*). These bundles descend from the base of each leaf, traverse the branch and enter the stem. A transverse section of the stem again from which the bud or branch is given off, and below the point of attachment of the latter, presents two concentric series of vascular bundles (CVII. *bis*, *f.* 12. *b*, *c*), besides an imperfect third consisting of a few scattered promiscuously in the axis of the stem; the outer series was formed in the former, the inner is derived from the buds and branches of the present year.

A longitudinal section through the axis of the stem, so made as to pass also through the axis of the branch, clearly shews that it is due to the position in which the buds are developed that a second series of wedges of wood is deposited. The buds originate towards the axis of the stem, within the vascular bundles of the previous year, (PLATE CVII. *bis*, *f.* 10. *b*), and opposite the insertion of the petiole (*f*). The whole of the vascular tissue descending from a bud is consequently deposited within the wood of the former year (*f.* 9 *c*.) generally each bundle on entering the stem from the branch divides, one portion joining the old wood, the other, remaining free and descending the stem, forms the second or inner plate of wood. The course of the bundles is however very uncertain, sometimes they do not divide, but either join the old vascular tissue, or continue free, and at others one portion crosses to the opposite side of the stem. Figures 9 and 10 of PLATE CVII. *bis*, shew various modifications of the course these vessels pursue, the uniform result being, that in the internode of the second year all the wedges of wood are formed, though these become lower in the stem multiplied by division.

As each bud gives off thirty to forty bundles of vessels, and these being superadded to those of the branch, such a plexus arises at the contracted junction of the second year's branch and that of the third year that their course can no longer be followed. Each of the woody plates however, continues to receive accessions throughout the life of the plant, those of the inner series containing as many layers as those of the outer. It is hence evident that the bundles first arranged in the branch of the second year (*f.* 10 A), on entering that of the third year (*f.* 10, B), must present a very complicated arrangement of tissues. The increase of the stems in diameter being, however, effected throughout the length of the plant by an addition of matter to the outside of both concentric series of wedges, it follows that the growth is in one sense at the same time Exogenous and Endogenous.

However complicated the nature and disposition of these tissues may cause the developement of the stems to appear, the order in which each wedge of wood and its layers of pleurenchyma are deposited in the first year is the same as in *Viscum*; nor are the tissues themselves very different from those of that plant. This is seen by comparing the figure of a first year's branch of *Viscum* as given in M. Decaisne's elaborate essay * pl. iii. f. 4, or in Link's superb 'Icones'† pars iv. t. 8. f. 1, with that of *M. brachystachyum*, (PLATE CVII. *bis*, *f.* 13).

In both *M. brachystachyum* and *Viscum album* two bundles of pleurenchyma are first deposited, one anterior and

* Link, Icones selectæ Anatomico-Botanicæ.

† Link, l. c. t. 8. f. 4. *β*.

the other posterior to the wood, the former constituting the fibres of the liber, between which and the wood all new layers of the latter are placed. The three or four succeeding layers of wood are accompanied in *Myzodendron* with bundles of pleurenchyma (PLATE CVII. *ter*, *f.* 1, *f*), and Link figures occasional fibres similar to those of the liber situated within the wood of *Viscum*. In many other particulars the structure of the wood of this genus and *Viscum* is very similar, as in the form the alburnum assumes (f. 1, *c*); in the narrow tubes containing a spiral vessel that occurring at the inner margin of the layers, which they thus separate, forming in *Viscum*, as here, an obscure medullary sheath. The tissue of the wood itself, (which is much modified in the different species of this genus, as I shall hereafter shew,) in the present species consists of longer tubes, whose walls, though very much more delicate than those of *Viscum*, probably are similarly perforated.

In some respects this disposition of tissues may be compared, though not strictly, with that of *Meniepermaceæ*, so beautifully illustrated by M. Descaisne.* After the stem of *Cocculus laurifolius* has attained a certain age, a second deposit of wedges of wood is formed externally to the liber, but without any additional liber. In *Myzodendron* the two wedges are deposited within one year of each other, the second within the first, and both are annually augmented by new matter; in both wedges however, the deposit of pleurenchyma similar to that of the liber, which accompanies every layer for the three or four first years, is withheld from all future layers.

Wood of other species. The above-described structure of the wood is, with slight modifications, common to all the species of the group *Eumyzodendron*. Though I am quite unable to make so satisfactory dissections of that of *M. punctulatum*, from the very remarkable density and minuteness of its tissues, I still am inclined to consider that its greatest peculiarity, the occupation of the position of the medulla by pleurenchyma, is a modification of what occurs in many *Loranthaceæ*, and is owing to the existence of a second or inner deposit of pleurenchyma similar to that of the liber, which in this species instead of being arranged in separate concentric bundles, is collected into one in the axis of the stem. Hence in the section of the stem of a leaf or flower-bud (PLATE CVII. *ter*, *f.* 8.), this tissue is seen to be present instead of the pith, and the great density of the wood of the older stems may, in a measure, be due to the incompressible nature of this tissue, and to the rays (which cannot be called medullary) being also formed, not of cellular tissue, but of pleurenchyma deposited with the scalariform in very small quantities.

Of the other *Eumyzodendrons* there are three whose tissues I have examined, and added figures of all, except *M. oblongifolium*, which hardly differs from *M. brachystachyum*.

In *M. quadriflorum*, DC., (PLATE CVII. *ter*, *f.* 6 and 7,) there is generally but one series of wedges of wood, the second being reduced to a single wedge, lying obliquely across the axis of the stem; the vessels of the liber are exceedingly inconspicuous (*f.* 6, *b*) the cellular tissue, bark, and pith large and loose, and the tubes forming the wood very large and few in number; the smaller tissue interposed between the layers (*e*) is conspicuous. In the old stems I cannot detect the inner layer of liber. The alburnum (*c*) has the appearance of compressed cellular tissue. I have not met with woody cells in this species.

In *M. linearifolium*, DC., there is but one series of woody plates (PLATE CVII. *ter*, *f.* 3, 4 and 5). The cellular tissue is large and loose, and contains both in the bark and medullary rays, numerous conspicuous masses of woody cells (*f.* 3 and 4, *a*). Both series of vessels of pleurenchyma (*f. b* and *g*) are large. Those of the scalariform tissue are of a greater diameter than in any of its congeners, cylindrical, constricted, (as in bothrenchyma) and septate at intervals equal to their breadth (*f.* 5. *a*): the tubes of the medullary sheath and those interposed between the layers of wood are of very unequal diameter and constricted here and there (*f.* 5. *b*).

Wood of Fagus. To PLATE CVII. is added a sketch of the wood of *Fagus Forsteri*;—*f.* 11 represents a transverse slice from a branch five years old, the letters denote the same tissues as in *f.* 5, 6, 8, 9 and 10. From

* Decaisne, Mémoire sur la famille des Lardizabalées; in Archives du Muséum d'Hist. Nat. vol. i. t. 10.

f. 12, which is taken from a branch of *Fagus* six years old, it will be seen that the ducts, dotted and otherwise marked vessels are large and abundant, and that the chief difference between *f.* 12, and a similar section of one wedge of *Myzodendron brachystachyum f.* 6, lies in the scalariform vessels being disproportionately abundant in the latter, and not being scattered amongst the pleurenchyma.

Ramification. In this, as in *M. punctulatum*, the terminal internodes bear, towards their upper part several buds, each opposite the axil of a leaf; of these the leaf-buds elongate and become new, permanent internodes; the flower-buds fall away. In the former species (PLATE CVII. *bis*, *f.* 1) the flower-buds were near the apex of the internode, and two frequently becoming developed into branches, the ramification was consequently dichotomous. In *M. brachystachyum* (PLATE CVII. *bis*, *f.* 7) the flower-buds are generally the upper, and the ramification hence alternate.

The vaginæ enclosing the unprotruded buds are vertically two-lipped, and formed from the bark which encloses a large cavity communicating almost with the axis of the stem where the bud is developed. The dehiscence is spontaneous, before the included organ has advanced sufficiently to force a passage. The relation of these parts to those of a germinating embryo is clear; the cavity in the internode containing the bud is analogous to that in the cotyledonary extremity of the embryo including the plumule, whose course in germination is thus imitated by the buds as often as the plant developes them.

Germination. I have been able to watch the progress of germination in this species and to follow the course of the radicle from the time of its leaving the pericarp, till it has fully established itself upon the tree it affects.

Several of the ripened seeds, still enclosed in their pericarps, are generally detached together from the parent plant, they adhere by their viscid filaments and are carried by the birds, winds, or other natural causes, from one tree to another, where they may often be seen hanging entangled amongst the leaves and twigs. The grain is placed almost in contact with the stem; it is immaterial to which surface. As I have not seen young *Myzodendrons* attached to old trunks and branches, I presume the young plant can only pierce a comparatively newly formed bark. The elongation of the caulicule pushes before it the disk and style, which fall away, and the radicle always escapes at this point and protrudes beyond the pericarp, to which the embryo remains attached until the parasite has gained a firm lodgment on the tree. The embryo now generally becomes curved, the elongating caulicule seeking the nearest point of the beech, which it finally reaches. At this period the cotyledons, distinctly swollen, are still contained in the shrivelled albumen, and a very evident notch marks their point of union (PLATE CVI. *f.* 5). The radicle now expands like the mouth of a trumpet, is concave and has become a compound body, consisting of three distinct parts, 1st. a membrane continuous with the surface of the caulicule, which expands horizontally over the cuticle, is glutinous, and is the first immediate cause of adhesion between the bark and the parasite. 2nd. A thick fleshy sheath, whose convex margins touch the bark. 3rd. A cushion-shaped body in the axis of the radicle, which is pressed against the bark and is destined more immediately to convey nourishment from the tree to the future full-grown parasite. At PLATE CVI. *f.* 4, is a germinating seed, with the cotyledonary extremity still enclosed in the albumen, and the radicular expanded as it appears on reaching the bark; *f.* 5 represents the same attached, with the albumen removed, shewing the notch of the cotyledons.

If a longitudinal section of the embryo be now made, (as at PLATE CVI. *f.* 6) there will be seen, 1st, at the base of the cavity in the cotyledonary extremity, two excessively minute green bodies, which, at a later period, become developed into the first pair of leaves, are pointed upwards towards the notch at the union of the cotyledons, and escape by the rupture of the membranes that enclose them: 2nd. spiral vessels descending from the base of these which are lost in the cellular substance of the cushion-shaped body (PLATE CVI. *f.* 7): 3rd, a longitudinal line indicating a future separation of the cotyledons and outer substance of the embryo, the latter forming an integument that includes the plumule, cushion-shaped body and its surrounding sheath. This central mass, included between the plumule above and base of the cushion below, is the growing portion of the future plant, all

external to it being more or less accessory. The above may be considered the first stage of developement, when the pericarp and albumen have fallen away; the outer coat of the radicle is expanded into a horizontal membrane, firmly attached to the cuticle of the *Fagus*, and the cushion-shaped body is pressed against the stem or twig of the tree, at that point where the process of penetrating the integuments will begin.

The second period commences by the cushion destroying the cuticle beneath it and reaching the epiphlœum. Still pushing onwards, it raises the membranous expansion and causes the surrounding cuticle, with or without some of the subjacent tissue, to be also detached with this membrane, for a considerable distance round the base of the radicle. The lesion to the plant is now extensive, and a diseased action, favourable to the progress of the parasite is induced, for the whole bark opposite the *Myzodendron* is raised from the wood (PLATE CVI. *f.* 8). The cushion, which may now be called a true root, is protruded rapidly, and the disorganization of the tissues it meets in its progress is equally rapid, a cavity is formed in the bark and the edges of the fleshy sheath that surrounds the root commence generally to form a close adhesion with the lips of the wound, (PLATE CVI. *f.* 10 and 11). At last the root, having penetrated the bark, arrives at the space left between the latter and the wood (PLATE CVI. *f.* 9), and, from the perpendicular direction, assumes a horizontal one. Previous to this there has been a deposition of much disorganized cellular tissue between the bark and the wood. The spiral vessels that descend from the plumule have followed the course of the root, which has gained the point where an abundance of nutritive matter is retained by the disorganized cellular tissue, and where a further supply is ensured for the use of the now fully established *Myzodendron*.

If at this time, the end of the second period, a vertical section of the *Myzodendron* and *Fagus* together be made, the appearance will be that represented at PLATE CVI. *f.* 10, where the plumule is seen fully developed into two opposite leaves, ready for protrusion, and where also a large space is left that almost isolates the axis of the caulicule from what remains as an investing membrane. The true root, or cushion-shaped body, at no time appears to form an adhesion with the bark; that being effected by the thick and fleshy sheath through which the radicle is protruded.

The union between the sheath and bark is more or less complete in different specimens that I have examined, according to their stage of growth. At PLATE CVI. *f.* 9, though the radicle has pierced the bark, the sheath had hardly united with the edges of the wound, and the young *Myzodendron* was removed without force from the *Fagus*; at *f.* 10 the union is complete, probably from the stem of the Beech being younger, and affording less resistance to the attack, and lastly, *f.* 11 represents a still more close union, the circumference of the sheath passing along the inner walls of the bark and its revolute edges, thus completely enveloping all the diseased part.

The third period is marked by the exsertion of the plumule from a dehiscence of the two coherent cotyledons, the consequent elongation of the ascending axis or stem of the *Myzodendron*, and the deposition of the liber and scalariform tissues in their proper positions; a process I have never had the opportunity of following.

A branch attacked by the *Myzodendron* suffers no apparent change below their point of union, but all beyond it being insufficiently nourished, does not increase in proportion, and after a time dies from atrophy. The whole juices of the branch being suddenly arrested at its abrupt termination, this dilates into the form of a cup, which, from the turning of the *Myzodendron* towards the light assumes an erect position. This cup (PLATE CVI. *f.* 12) is more or less broad (sometimes three inches in diameter) and shallow, uniformly covered with cuticle and bark, and has inflexed, wrinkled edges. On a vertical section (PLATE CVII. *f.* 1) it is seen to present a shallow, conical hollow, in which the *Myzodendron* rests, and to be formed of as many layers of wood as years have elapsed since the germination of the parasite. The equally expanded base of the latter completely fills this cup in the form of a disk, whose edges overlap those of its support, and swell out into a prominent ridge at their point of union. At PLATE CVII. *f.* 1, a vertical section of the cup of the Beech and still attached disciform base of the *Myzodendron* is given. The union of the cellular tissues of the bark of the two is very intimate, but in no case and no stage of their growth have I been enabled to trace any interlacing of their tissues, or any union of the one with the other.

The woody plates of the various branches of the *Myzodendron* all meet in its expanded base, and are there strangely convoluted and contorted, enclosing masses of brown and dead cellular tissue, probably consisting in part of the alburnum of the beech deposited there, as well as of the decayed medullary rays of the *Myzodendron*. Lower down, the woody plates, much reduced in size, slightly converge and meet the layers of wood of the beech; these may perhaps come into actual contact, but generally, if not always, there is a deposit of disintegrated cellular tissue between them. The *Myzodendron*, having finally arrived at its full growth, a time probably coincident with, if not dependent upon, the period when the *Fagus* cannot supply it with sufficient nutriment, falls away and leaves a cup still attached to, or rather terminating the branch of a Beech (PLATE CVI. *f.* 13) whose inner surface is channelled with radiating fissures and these again crossed by the concentric rings of the wood.

This process of germination is probably similar to what is pursued by many Loranthaceous plants, and is rudely represented by M. Korthals,* as occurring in some Javanese species of this Order.

The resemblance between the sheathed radicle of *Loranthus* and *Viscum* and a coleorhiza was first pointed out by Mirbel†, but hardly admits of a strict comparison of this order with *Endorhizæ* in this respect, any more than the conferruminated cotyledons of this species are to be compared with the one large cotyledon of the true *Monocotyledones*, for in *Viscum* the cotyledons equally enclose a cavity containing the plumule, though they are not combined. The sheath of the root of *Loranthaceæ* appears a peculiar organ, especially adapted to the wants of the plants in which it occurs.

So very highly organized a nature of the embryo renders it probable that germination takes place very soon after the fall of the seed, or perhaps even before. It is remarkable too, that the operation proceeds in summer and exposed to the full light of day, there being no viscous substance to protect the embryo. I have described the radicle as descending from the seed to its future point of attachment, but here, as in *Viscum*, it is immaterial to which surface of the branch the embryo is approximated, the radicular extremity being invariably directed towards the axis. In a dried specimen of *M. quadriflorum* I have found a seedling plant fully established on its parent. The frequent curving of the caulicule also, immediately after the protrusion of the radicle, is highly curious, the seed being loosely suspended by its filamentous appendages, and thus presenting no fulcrum or point of resistance, in attempting to overcome which, such a flexure might be induced. It is worthy of remark that both these functions, so closely resembling instinct in the lower animals, are characteristic of an embryo of more complex structure than any with which I am acquainted.

The absorption of nourishment from the albumen takes place through the cotyledonary extremity, which is retained in the perisperm, and by the time the radicle has gained the bark of the tree, the fecula of the albumen is wholly absorbed. This transfer of nourishment to such an extent, effected simply by the contact of two cellular membranes, only one of them being endowed with life, is a proof that in vegetables no very highly complicated tissues are required to conduct a very subtile chemical operation.

The bark of the Beech becomes detached from the subjacent wood prior to its complete penetration by the *Myzodendron*; the intrusion itself is by no means a mechanical operation, there can be little or no pressure exerted by an embryo suspended as this is, it must be effected by the corrosion of the cortex which simultaneously produces a separation of the bark from the wood, materially facilitating the progress of the radicle.

I have mentioned that the duration or period of life allowed to the *Myzodendron*, is probably determined in some degree, by the effect it produces on the plant it infests; the latter being of slower growth, is sure at some period to rid itself of the intruder. Thus, the weight of the parasite being considerable, and exerted upon the branches

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* Verhandeling over de op Java &c. verzamelde Loranthaceæ door P. W. Korthals.

† Annales du Muséum d'Hist. Nat. vol. 16. p. 429. t. 21.

it weighs them down and checks the progress of the sap, upon a copious supply of which its own continued existence depends. This remark applies to many parasites which attaching themselves to the younger branches thus commence working out their own destruction almost from the earliest stage of their existence.

The open cups terminating the branches of Beech trees, similar to what is figured at PLATE CVI. *f.* 13, are frequently to be met with in the woods of Fuegia, and mark the spot where one of these curious vegetables flourished; by collecting water they soon decay, and the branch is killed below for some little distance, but the mischief caused by so large a parasite is after all very insignificant, and what no healthy *Fagus* suffers from.

Myzodendron brachystachyum is equally abundant in Hermite Island with *M. punctulatum*, though from the colour of its leaves, resembling the common forest foliage, it is by no means so conspicuous an object. I met with the male plants much more frequently than the female.

PLATE CIII. *Fig.* 1, a young female plant attached to *Fagus Forsteri*; *fig.* 2, portion of a female plant with ripe fruit; *fig.* 3, portion of a male stem with flowering and leaf-bearing branches:—of the *natural size*.

PLATE. CV. *Fig.* 1, portion of a male raceme with bractea and spike of flowers; *fig.* 2, a male flower removed; *fig.* 3, vertical section of a stamen; *fig.* 4, transverse section of an anther; *fig.* 5, very young pollen-grains enclosed in the pollinic utricle; *fig.* 6, the same more fully developed; *fig.* 7, an immature grain removed from the utricle; *fig.* 8, mature grain of pollen; *fig.* 9, portion of a female raceme with bractea and spike; *fig.* 10, female flower; *fig.* 11, transverse section of ovary, showing the three fissures containing each a seta; *fig.* 12, vertical section of the same; *fig.* 13, ovuliferous column removed from the cavity of the ovarium; *fig.* 14, a ripe fruit; *fig.* 15, vertical section of the same; *fig.* 16, column removed from the same with immature pendulous seed and two abortive ovula; *fig.* 17, ripe seed, the albumen sulcated, the broad radicular portion of the embryo enveloped in the transparent membrane; *fig.* 18, the same with the membrane and funiculus removed; *fig.* 19, vertical section of an immature seed to show the continuation of the membrane lining the cavity in the albumen in which the cotyledons are lodged; *fig.* 20, embryo removed; *fig.* 21, vertical section of embryo showing the cavity enclosed by the cotyledons:—all more or less *highly magnified*.

PLATE CVI. *Fig.* 1, a twig of Evergreen Beech with attached germinated seed of *M. brachystachyum*; *fig.* 2, twig of Deciduous-leaved Beech with the same; both of the *natural size*; *fig.* 3, magnified view of the latter; *fig.* 4, embryo on its first contact with the bark, the cotyledons still enclosed in the albumen; *fig.* 5, the same attached to the bark, with the albumen removed; *fig.* 6, vertical section of the same, shewing the outer coat which spreads over the bark, the sheath which attaches itself to the bark enclosing the cushion-shaped root, and at the upper extremity the cavity enclosing the plumule; *fig.* 7, plumule and vascular tissue descending along the axis of the embryo; *fig.* 8, longitudinal section of attached embryo and branch of *Fagus*, shewing the outer coat applied to the cuticle, the sheath to the corroded bark and the root penetrating the cellular tissue of mesophlœum; *fig.* 9, the same more advanced, the radicle having perforated the bark; *fig.* 10, a section of parasite and branch at right angles to the axis of the latter, shewing the margin of the sheath firmly attached to the lips of the wound and the radicle applied to the wood; *fig.* 11, similar section of another specimen, the edges of the bark revolute, the union of the parasite and Beech very intimate; all more or less *highly magnified*; *fig.* 12, cup formed on the branch of a Beech filled by the expanded base of a fully grown *Myzodendron*, the branches of the latter cut off, thus showing the two series of woody plates; of the *natural size*; *fig.* 13, cup left on the Beech after the fall of a small specimen of *Myzodendron*:—also of the *natural size*.

PLATE CVII. *Fig.* 1, longitudinal section through the axis of the branch of a Beech, the cup it forms and its contained parasite; of the *natural size*; *fig.* 2, vertical section of branch of *Myzodendron*; *fig.* 3, transverse section of the same, showing the two series of woody plates and papillæ on the epidermis; *fig.* 4, transverse section of the cuticle and one of the papillæ, showing the cuticle to be thickened and cellular, pushing the epiphlœum inwards before it; *fig.* 5, transverse section of a portion of the stem, in which the scalariform tissue (*c*) is crossed by masses

Myzodendron brachystachium, DC.

of fibrous tissue (*b*) similar to that of the liber; at *a* other woody fibres are seen descending in the bark:—the more usual disposition of the tissues in the stem of this plant is shown at Plate CVII. *ter*, *f*. 1;—*fig*. 6, a vertical section of the same through the axis of the stem, showing, at *a*, a bundle of woody fibres in the bark protected by very thick cells; at *b*, the vessels of the liber in immediate contact with the wood; at *c*, the scalariform tissue forming the wood:—all more or less *highly magnified*.

Plate CVII. *bis*, *Fig*. 7, stem and branches of *M. brachystachyum*; letter *a*, flowering branches which fall away; *b*, leaf-bearing branch elongating; *c*, apex of the stem which suffers no further elongation; *figs*. 8 and 9, vertical sections of stem and branches: letter A, internode of the third year; B, internode of the second year; *a*, apex of the stem; *b*, nascent buds; *c*, branches; *d*, vascular bundles of the stem; *e*, vascular bundles of the branches; *f*, scar left by the fall of the leaf of the previous year; *g*, lips of the vaginæ:—of the *natural size*: *fig*. 10, transverse section of leaf-bearing branch, showing the solitary series of vascular bundles; *fig*. 11, the same, more highly magnified; letter *a*, the cells originating the cuticle; *b*, vessels of liber; *c*, wood; *d*, pleurenchyma similar to that of the liber; *fig*. 12, transverse section of stem, two years old; letter *b*, the outer series of wedges of wood; *c*, inner ditto; *d*, wedges belonging to a third series, placed in the medulla; *x*, cavity containing a bud:—*more or less magnified*.

Plate CVII. *ter*, *Fig*. 1, portion of a transverse section of the stem of *M. brachystachyum*, five years old; letter *a*, woody cells in the bark; *b*, vessels of the liber; *c*, alburnum; *d*, scalariform tissue of the wood; *e*, slender spiral and other vessels between each layer of wood; *f*, pleurenchyma similar to that of the liber, deposited with the second and third layers of wood; *g*, pleurenchyma deposited during the first year at the same time as the first vessels of the liber; *h*, cellular tissue between the concentric series of wedges; the letters *c'*, *d'* &c., refer to the same tissues in the wedge of the inner series, and letter *m* indicates the pith; *fig*. 2, a vertical slice from the same branch, including the same tissues viewed longitudinally; the letters indicate the same tissues as in *fig*. 1.

In the following figures the letters indicate the same tissues; *Fig*. 3, *M. linearifolium*, DC., a portion of a transverse, and *fig*. 4, a corresponding longitudinal slice of a stem four years old; *fig*. 5, *a*, constricted scalariform tissue of wood; *b*, spirally marked vessel from between the layers of wood; *fig*. 6, *M. quadriflorum*, DC., portion of a transverse, and *fig*. 7, portion of a longitudinal slice, from a stem four years old.

3. Myzodendron *oblongifolium*, DC.; foliis oblongo- v. lineari-lanceolatis, floribus in racemos axillares basi folio suffultos dispositis, setis plumosis pericarpio multoties longioribus. M. oblongifolium, *DC. Prodr*. vol. v. p. 671. *Pœpp. et Endlicher, Nov. Gen. et Sp. Am*. p. 1. t. 2. *Delessert, Icon. Select*. vol. iii. p. 47. t. 80.

Hab. South Chili and Fuegia; Port Famine, *Capt. King*.

Omnia *M. brachystachyi* sed folia elongata et angustiora, setæque pericarpii ter longiores.

Mr. Darwin's specimens of this have male flowers only, those collected by Mr. Eights and Webster have ripe fruit; all agree with the excellent figure given by M. Decaisne in Delessert's Icones, in which the position of the seed in the achænium alone is inaccurate.

4. Myzodendron *quadriflorum*, DC.; ramis florentibus elongatis ramulos alternos 3–5-floros apice unifoliatos gerentibus, foliis parvis late oblongis obtusis, achæniis linearibus, pericarpii setis gracillimis apicibus denudatis. (Tab. CVII. *ter*, *Fig*. 6 and 7.) M. quadriflorum, *DC. Coll. Mém*. t. 12. f. 1. *Prodr*. vol. iv. p. 286.

Hab. Strait of Magalhaens, Port Famine, *Capt. King*; Staten Land, *Mr. Webster*.

The flowering ramuli of this species are much elongated, the leaves small, and the filaments of the pericarp very slender, with brown naked apices. A description of the wood is given at p. 300.

Plate CVII. *ter*, *Fig*. 6 and 7, wood of *M. quadriflorum*; letter *b*, vessels of the liber; *c*, alburnum; *d*, scala-

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riform tissue; *e*, slender tissue between the layers of scalariform tissue; *c'*, *e'* and *d'*, refer to the same tissues of the inner wedge of wood:—all very *highly magnified*.

XXIII. RUBIACEÆ, *Juss.*

1. GALIUM, *L.*

1. GALIUM *Aparine*, Linn.; *DC. Prodr.* vol. iv. p. 608. *Engl. Bot.* t. 816.

HAB. Strait of Magalhaens, Port Famine and Port Gregory, *Capt. King*; Good Success Bay, *Banks and Solander*.

This, which is undoubtedly the common English "Cleavers," appears truly wild in Fuegia, having been found at three very remote stations, two of them scarcely visited by Europeans; it is also a native of the Island of Chiloe, of the Cape of Good Hope, and in North America it ranges between the latitudes of Fort Vancouver and the Missisippi River.

2. GALIUM *Chilense*, Hook. fil.; annuum, scaberulum, caule debili simpliciusculo, foliis quinis senisve patentibus oblongo-lanceolatis in aristam acuminatis super marginibus nervoque dorso retrorsum scaberulis, pedunculis unifloris solitariis florentibus brevissimis fructiferis validis folio subæquilongis, fructibus hispido-pilosis.

HAB. Chonos Archipelago; *C. Darwin, Esq.*

Caules implexi, spithamæi, angulis scaberulis; ramis divaricatis. *Folia* subflaccida, ½–¾ unc. longa, internodiis ½ breviora.

This cannot be confounded with any other of the few one-flowered species of this genus.

3. GALIUM *Fuegianum*, Hook. fil.; annuum?, glabriusculum, caulibus suberectis ramosis glaberrimis, foliis quaternis elliptico-oblongis acutis obscure 3-nervibus marginibus scaberulis supremis hispidulis, pedunculis terminalibus ternis unifloris florentibus brevissimis fructiferis validis elongatis, fructibus hispido-pilosis.

HAB. Strait of Magalhaens; Port Famine, *Capt. King*; Cape Negro and south part of Fuegia, *C. Darwin, Esq.*.

Caules spithamæi, glaberrimi, ramosi; ramis suberectis. *Folia* ¼ unc. longa, subcoriacea, interdum sed rarius parce pilosa.

This approaches the *G. triflorum*, Mich., of the northern hemisphere, but may readily be distinguished by the quaternate leaves and the invariably simple peduncles.

4. GALIUM *Magellanicum*, Hook. fil.; perenne?, caule suberecto parce ramoso ad angulos minutissime hispidulo, foliis quinis lineari-lanceolatis acutis glaberrimis marginibus recurvis scaberulis, pedunculis axillaribus plerisque solitariis bifloris rarius binis et unifloris, floribus majusculis, fructibus glaberrimis.

HAB. Strait of Magalhaens; Cape Negro, *C. Darwin, Esq.*

Caules 3-unciales, erecti, nitidi; ramis erecto-patentibus. *Folia* patentia, subcoriacea sed non rigida, marginibus vix ac ne vix scaberulis. *Flores* magnitudine *G. borealis*, straminei? *Pedunculi* fructiferi folio subæquilongi.

The present is the largest-flowered of any of the Antarctic *Galia*, all which, except *G. Aparine*, appear peculiar to the high southern latitudes.

5. GALIUM *Chonoense*, Hook. fil.; perenne?, scabridum, caule valido ad angulos retrorsum scabrido subfastigiatim ramoso, foliis senis rigidiusculis patentibus lanceolatis subobtusis pagina superiore marginibus recurvis nervoque dorso scabridis, pedunculis folio brevioribus solitariis fasciculatisve 1–5-floris plerisque foliatis, pedicellis simplicibus v. bifidis, floribus minimis, ovariis glaberrimis.

HAB. Chonos Archipelago; *C. Darwin, Esq.*

Caulis spithameæs, diametro pennæ passerinæ, subnitens, foliosus, pluries ramosus; ramis erecto-patentibus. *Folia* ½ unc. longa, patentia, siccitate nigrescentia: *Flores* valde inconspicui. *Fructus* ?.

6. GALIUM *Antarcticum*, Hook. fil.; glabriusculum, caule decumbente tenui flaccido parce ramoso, foliis quaternis patenti-recurvis oblongis oblongo-lanceolatis lineari-lanceolatisve marginibus tenuissime scaberulis, floribus in axillis foliorum solitariis, pedunculis fructiferis validis folio brevioribus, fructibus glaberrimis lævibus. G. trifidum? *D'Urv. in Mém. Soc. Linn. Paris*, vol. vi. p. 612. *Gaud. in Freyc. Voy. Bot.* p. 135. G. debile, *Banks et Sol. MSS. in Bibl. Banks.* (*non Hoffm.*).

HAB. Tierra del Fuego; Good Success Bay, *Banks and Solander*; Staten Land, *Dr. Eights*; Hermite Island, *J. D. H.*; Falkland Islands, *D'Urville, &c.*; Kerguelen's Land, White Bay. *Dr. Robertson.*

Caules 3–5 unc. longi, interteti, subnitidi, ad angulos sub lente scaberuli. *Folia* flaccida, patentia, obtusa, 2 lin. ad ½ unc. longa, opaca, marginibus recurvis. *Flores* sessiles, albi, trimeri; staminibus 3. *Pedunculi* fructiferi arcuati; fructibus didymis glaberrimis.

A very distinct little species, somewhat resembling the *G. saxatile*, L., of Europe. It abounds in the Falkland Islands, especially near fresh-water lagoons.

2. NERTERA, *Banks.*

1. NERTERA *depressa*, Banks. *Fl. Antarct.* pt. 1. p. 23.

HAB. Falkland Islands, *Gaudichaud, D'Urville*, and all future collectors.

This curious little plant has not hitherto been described as a native of Fuegia, though abundant in the Falkland Islands and Tristan d'Acunha, also on the west coast of America, at Valdivia, and in other parts of Chili. A specimen, apparently of the same species, has been transmitted from the Andes of Columbia by Professor Jameson, but it bears neither flower nor fruit.

XXIV. VALERIANEÆ. *DC.*

1. VALERIANA, *Neck.*

2. VALERIANA *lapathifolia*, Vahl; foliis radicalibus longe petiolatis oblongis acutis basi cordatis rotundatisve integris marginibus obscure sinuatis caulinis ovatis breve petiolatis supremis sæpe sessilibus nervis super pilosiusculis, petiolis basi ciliatis, panicula composita late ovata, bracteis linearibus obtusis basi ciliato-dentatis, staminibus 3. V. lapathifolia, *Vahl, Enum. Plant.* vol. ii. p. 11. *DC. Prodr.* vol. iv. p. 635.

HAB. Strait of Magalhaens, *Commerson*; Port Famine, *Capt. King*; Cape Tres Montes, *C. Darwin, Esq.*

Rhizoma elongatum, horizontale, crassitie digitis minoris, atrum, nodosum, ad nodos radices plurimos fibrosos emittens. *Folia* caulina 1½ pedalia, subcarnosa; petiolo laminam superante. *Paniculæ* terminales, 1–2 unc. longæ. *Fructus* glaberrimus, compressus, 6-nervis.

2. Valeriana *carnosa*, Smith; glaberrima, caule erecto herbaceo, foliis caulinis longe petiolatis obovatis obovato-lanceolatisve carnosis sinuatis serratis inciso-pinnatifidisve lobis sinubusque obtusis caulinis minoribus supremis sessilibus, panicula terminali elongata ramis suberectis, bracteis acuminatis basi connatis. V. carnosa, *Smith, Icon. ined. fasc.* 3. t. 52. *Vahl, Enum.* vol. ii. p. 12. *DC. Prodr.* vol. iv. p. 635. V. Magellanica, *Lam. Illustr.* vol. i. p. 93. *Duf. Val.* p. 51.

Hab. Strait of Magalhaens, *Commerson*; Port Famine, *Capt. King*; Cape Negro, *C. Darwin, Esq.*

Herba bipedalis, stricta, erecta. *Caulis* crassitie pennæ anserinæ. *Folia* varia, 2 unc. ad pedalem, interdum fere integerrima. *Pedunculi* sæpe spithameæ. *Flores* ut in congeneribus. *Fructus V. lepathifoliæ.*

3. Valeriana *sedifolia*, D'Urv. *in Mém. Soc. Linn. Paris*, vol. iv. p. 612. *Gaud. in Freyc. Voy. Bot.* p. 135. *DC. Prodr.* vol. iv. p. 633. *Homb. et Jacq. in Voy. au Pole Sud, Bot. Dicot.* t. 16, A.

Hab. Strait of Magalhaens, *MM. Hombron and Jacquinot*; Falkland Islands, *D'Urville.*

4. Valeriana *Magellanica*, Homb. et Jacq. *in Voy. au Pole Sud, Bot. Dicot.* t. 16. B. *sine descript. non Lamarck.*

Hab. Strait of Magalhaens, *MM. Hombron and Jacquinot.*

I have seen no specimens of either of the above curious little species, but M. Riocreux's figures in the work quoted, are excellent.

XXV. COMPOSITÆ, *Juss.*

1. CHILIOTRICHUM, *Cass.*

§ I. Euchiliotrichum; *capitulis radiatis.*

1 Chiliotrichum *amelloides*, Cass., *Dict.* vol. viii. p. 576. *Gaud. in Ann. Sc. Nat.* vol. v. p. 104. *et in Freyc. Voy. Bot.* p. 135. *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 612. *DC. Prodr.* vol. v. p. 216. *Hook. Ic. Plant.* t. 485. C. rosmarinifolium, *Less. in Linnæa*, vol. vi. p. 109. Amellus diffusus, *Forst. Comm. Gœtt.* vol. ix. p. 30. A. rosmarinifolius, *Pœpp. MSS. Coll.* 2. A. candidus, *Banks et Sol. MSS. in Bibl. Banks. cum icone.* Tropidolepis diffusa, *Tausch. in Bot. Zeit.* vol. xii. p. 67. Aster Magellanicus, *Spreng. Syst. Veget.* vol. iii. p. 526. "Arbuste à feuilles de romarin," *Pernetty, Voy.* vol. ii. p. 61. "Fascine" colonorum.

Hab. South Chili, Fuegia, and the Falkland Islands; *Commerson, Banks and Solander*, and all succeeding voyagers.

In the first part of this work (p. 37 in obs.) I have mentioned how closely this genus is allied to *Eurybia* and to *Olearia*, agreeing with the former in the oblong involucre and uniseriate pappus, and with the latter in habit through *Olearia oporina* (*O. semidentata*, Decaisne in Voy. Venus; *Arnica oporina*, Forst.). It differs from both in the presence of linear scales occasionally mixed with the flowers of the disc.

The present is the tallest dicotyledonous plant in the Falkland Islands, except *Veronica elliptica*, which is exceedingly rare. It attains a height of about 4–5 feet, and forms a brushwood along the banks of streams

§ II. Anactinia; *capitulis discoideis, homogamis.*

2. Chiliotrichum *humile*, Hook. fil.; caule prostrato ramoso, ramis abbreviatis ascendentibus erectisve foliosis foliisque subter incano-tomentosis, foliis dense imbricatis lineari-oblongis obtusis recurvis coriaceis

marginibus incrassatis revolutis, capitulis solitariis terminalibus sessilibus, involucri squamis obtusiusculis, flosculis tubulosis.

HAB. Strait of Magalhaens, Cape Gregory; *Capt. King.*

Suffruticulus humilis, ramosus. *Caules* tortuosi, 3–5 unc. longi, ramulis per totam longitudinem foliosis, ½–1 uncialibus. *Folia* 2 lin. longa, ½ lin. lata, super medio sulcata, arachnoidea v. glabrata, subter lana appressa incano-tomentosa. *Capitula* plurima, erecta, ½ unc. longa, discoidea, flosculis omnibus hermaphroditis. *Involucrum* campanulatum; squamis irregulariter 3-serialibus, concavis, chartaceis, dorso arachnoideis, exterioribus brevibus late ovato-oblongis, interioribus longioribus, lineari-oblongis oblongo-lanceolatisve, disco paulo brevioribus. *Receptaculum* angustum, subgloboso-capitatum, nudum nisi squamæ paucæ lineares inter flosculos exteriores sparsæ. *Corollæ* omnes tubulosæ, 5-dentatæ, dentibus linearibus obtusis recurvis. *Antheræ* lineares, basi brevissime bisetosæ, filamentis superne paulo incrassatis. *Styli* rami lineares, majusculi, obtusi, exserti. *Pappi* setæ plurimæ, rigidæ, scabridæ, subflavescentes. *Achænium* lineari-obconicum, subangulatum, hispidulum.

Though differing from the *C. amelloides* in habit, and especially in the absence of ligulate florets, I am unable to point out any characters that will separate these two plants generically; for the structure of the involucre, the occasional linear paleæ on the receptacle, the achænium, the pappus, stamina and styles, are essentially the same.

When describing the Antarctic species of *Senecio* I shall allude more particularly to the radiate plants of that genus being natives of a damp, and the discoid of a drier, climate. The same remark seems to hold good with *Chiliotrichum*, the *C. amelloides* being confined to the humid atmosphere and soil of the Falkland Islands and Fuegia; whilst the present, and two allied discoid species, (both, however, too nearly related to *C. humile*), of which I subjoin descriptions*, affect the arid plains of Patagonia.

C. humile is also a native of Cape Fairweather on the east coast of Patagonia.

2. ASTER, *L.*

1. ASTER *Vahlii*, Hook. et Arn. *in Comp. Bot. Mag.* vol. ii. p. 49. *Hook. Ic. Plant.* t. 486. A. Gilliesii, *Hook. et Arn. l. c.* A. glabratus, *Banks et Sol. MSS. in Mus. Banks. cum icone.* Erigeron Vahlii, *Gaud. in Ann. Sc. Nat.* vol. v. p. 103, *et in Freyc. Voy. Bot.* p. 135. *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 611. *DC. Prodr.* vol. v. p. 295.

HAB. South Chili, Fuegia and the Falkland Islands, abundant; *Banks and Solander*, and all succeeding voyagers.

A very distinct species, particularly abundant in the moister parts of the Falkland Islands, and in Fuegia south of the Strait of Magalhaens on the eastern side, but ascending on the west coast of America as far as Conception

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* 1. CHILIOTRICHUM *Kingii*, n. sp.; caule ramisque suberectis angulatis appresse tomentosis laxe foliosis, foliis coriaceis linearibus obtusis recurvis, capitulis sessilibus breviter pedunculatisve, involucri late campanulati squamis oblongo-lanceolatis acutis, achæniis sericeis.

HAB. Patagonia, *Capt. Middleton* in *Herb. Bentham*; Port St. Helena, *Capt. King.*

2. CHILIOTRICHUM *Darwinii*; n. sp.; caule ramisque suberectis angulatis appresse tomentosis, foliis imbricatis coriaceis linearibus recurvis, capitulis pedunculatis, involucri subelongati campanulati squamis anguste linearibus acuminatis vernicosis.

HAB. Patagonia; Port Desire, *C. Darwin, Esq.*

(lat. 37°); also found on the Andes by Dr. Gillies, in lat. 33°, and on the mountains of Quito in Colombia, under the equator, by Professor Jameson, whose specimens appear to differ in no respect from those gathered in Fuegia.

The whole plant is generally perfectly glabrous, though not unfrequently a slight pubescence is observable on the scales of the involucre in individuals collected in the Falklands and Fuegia. The *A. Gilliesii* is certainly not distinct from this; both have the flowers of the ray disposed in several series; but otherwise, and especially in habit, they agree better with *Aster* than with the following genus.

3. ERIGERON, *L.*

1. Erigeron *alpinus*, L. *Sp. Pl. E. Bot.* t. 464. E. pauciflorus, *Banks et Sol. MSS. in Mus. Banks. cum icone.*

Var. β. *uniflorus*, Ed. Cat. *Brit. Fl.* p. 193. E. uniflorus, *L.*; *Hook. et Arn. in Comp. Bot. Mag.* vol. ii. p. 50.

Var. γ, *myosotifolius*; foliis caulinis sessilibus linearibus subobtusis appresse cano-pubescentibus, floribus solitariis v. ad apicem caulis aggregatis.

Hab. Strait of Magalhaens; Port Gregory, *Capt. King and C. Darwin, Esq.*; Cape Negro, *C. Darwin, Esq.*; Port Famine, *Capt. King*; Good Success Bay, *Banks and Solander.* Var. β, Cape Negro and Elizabeth Island, *C. Darwin, Esq.* Var. γ, Port Famine, *Capt. King.*

I quite believe the *E. alpinus* and var. *uniflorus* of Fuegia to be identical with the so-named species of Europe and North America, but whether they may not be in both countries varieties of another plant, is more than doubtful. Thus, in North America the *E. alpinus* passes at once and unequivocally into a species called *E. glabratus*, which is of a totally different habit and appearance, and unites the alpine plant with others of the United States. So, in Europe, *E. alpinus* of the Altai mountains becomes *E. elongatus*, in which the pappus is about one half longer than the achænium, and that again *E. glabratus*, whose pappus is twice as long as the achænium. Again, I have seen specimens of this species from the Sierra Nevada of Spain, alt. 8,000 feet, which are the common form of *E. alpinus*, and a variety gathered at 1,000 feet of lower elevation, apparently the same as *E. acris*; both are named *E. alpinus* by M. Boissier, a most accurate and learned European botanist. The individuals of this genus are apparently in the same predicament as those of *Epilobium*, a form from one country often constituting the link that unites two allied ones of a remote region, insomuch that it is impossible to study the species properly without an examination of individuals from all parts of the globe. The rapidity with which an *Erigeron* may be dispersed and the consequent facility the genus affords for presenting varieties, are evidenced by the spread of *E. Canadensis*, L., throughout the warm countries of the old world, since the discovery of the new; it is a plant which, requiring much summer heat, does not enter into the Antarctic regions, though abundant in Canada.

The variety γ is possibly a distinct species, but my specimens are very imperfect, and the *E. alpinus* itself is so variable in all the parts of the world it inhabits that this may be a state of it. Capt. King has what I consider an intermediate variety from Cape Fairweather, on the coast of Patagonia, which in hairiness and foliage resembles *E. alpinus*, but the capitula are, as in var. *myosotifolius*, aggregated at the apex of the stem.

2. Erigeron *Sulivani*, Hook. fil.; totus pilis appressis subhirsutus, caule brevissimo depresso bi-tricipiti folioso, foliis substellatim patentibus elliptico-ovatis subacutis integerrimis in petiolum attenuatis, scapo erecto monocephalo foliis linearibus bracteolato, capitulo majusculo depresso, involucri squamis anguste linearibus hispido-lanatis. Hieracium? incertum, *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 608. *Gaud. in Freyc. Voy. Bot.* p. 134.

Hab. Falkland Islands, on moist cliffs near the sea; *D'Urville, Capt. Sulivan, J. D. H.*

Lagenophora Commersonii Cass.

Senecio trifurcatus, Less.

Fitch del. et lith.

Reeve Brothers, imp.

Omnia *E. uniflori*, sed foliis latioribus, petiolo distincto, laminaque elliptico-ovata non spathulata.

I have ventured to separate this from the former because of its broad leaves and evident petioles, though I must confess to having seen specimens from Switzerland of *E. grandiflorus*, Hoppe, a variety of *E. alpinus*, in which the shape of the foliage very closely approaches this. It bears the name of Capt. Sulivan, R.N., who during his several visits to and survey of the coasts of the Falkland Islands, formed a very interesting botanical collection which he has liberally placed in my hands for examination.

3. ERIGERON *spiculosus*, Hook. et Arn. *in Bot. Beechey*, p. 32, *et in Comp. Bot. Mag.* vol. ii. p. 49. (exclud. *var.* glabellus). *DC. Prodr.* vol. v. p. 289.

Var. *minor*, capitulis minoribus. E. Canadensis, *Hook. et Arn. l. c. in part.*

HAB. Strait of Magalhaens, Port Famine, *Capt. King.* Var. *minor*, Cape Negro, *C. Darwin, Esq.*

An exceedingly variable species, allied to *E. Canadensis*, though with much larger capitula. The var. *minor* was referred in the work quoted (under that variety) to *E. Canadensis*, but I find no specimens of that species, either European or North or South American, to vary much in the size of the capitula. The variety *glabellus*, of Hooker and Arnott, is, I think, certainly referable to *E. alpinus*.

4. LAGENOPHORA, *Cass.*

1. LAGENOPHORA *Commersonii*, Cass. *Dict.* vol. xxv. p. 110. *Lessing, Compos.* p. 198. *DC. Prodr.* vol. v. p. 307. *Hook. et Arn. in Comp. Bot. Mag.* vol. ii. p. 51. L. Magellanica, *Cass. in Bull. Sc.* 1816, p. 199. *Carmichael in Trans. Soc. Linn. Lond.* v. xii. p. 507. Calendula pumila, *var. β, Forster, Comm. Gœtt.* vol. ix. p. 40. C. Magellanica, *Willd. Sp. Pl.* vol. iii. p. 2344. C. pusilla, *Pet. Thouars, Fl. Trist. d'Ac.* p. 40. t. 9 Aster nudicaulis, *Commerson, Herb. Lam. Encycl.* vol. i. p. 308. *Ill. Gen.* t. 681. f. 4. Bellis Magellanica, *DC. in Lam. Encycl.* vol. v. p. 7. *β*, revoluta, *Banks et Sol. MSS. in Mus. Banks. cum icone.* (TAB. CVIII.)

Var. *β. hirsuta*. L. hirsuta, *Lessing, in Linnæa*, vol. vi. p. 131. *Poppig et Endl. Nov. Gen. &c.* vol. i. p. 16. t. 26.

HAB. South Chili and Fuegia; *Commerson, Banks and Solander*, and all succeeding voyagers. Falkland Islands, *C. Darwin, Esq., Mr. Wright, J. D. H.*

This little species varies a good deal in size, from one half to three inches long; the leaves are nearly entire or sinuated, smooth or more or less hairy, sometimes almost hirsute. Mr. Darwin's specimens, from Wollaston Island near Cape Horn, have hairy scapes.

PLATE CVIII. (left-hand figure), *Fig.* 1, receptacle and involucre; *fig.* 2, floret of the ray; *fig.* 3, floret of the disc; *fig.* 4, style of a floret of the disc; *fig.* 6, achænium:—*all magnified.*

5. BACCHARIS, *L.*

1. BACCHARIS *Magellanica*, Pers. *Ench.* vol. ii. p. 425. *DC. Prodr.* vol. v. p. 405. *Hook. et Arn. in Bot. Journ.* vol. iii. p. 26. B. tridentata, *Gaud. in Ann. Sc. Nat.* vol. v. p. 103, *et in Freyc. Voy. Bot.* p. 185. *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 610. B. cuneifolia, *DC. Prodr.* vol. v. p. 406. *Hook. et Arn. l. c.* B. sessiliflora, *Vahl, Symb.* pt. 3. p. 97. Conyza cuneifolia and C. Magellanica, *Lam. Encycl.* vol. ii. p. 91. "Sapinette," *Pernetty Voy.* vol. ii. p. 63.

HAB. Fuegia and the Falkland Islands, most abundant; *Née, Commerson*, and all succeeding voyagers.

Rather a variable plant in the size of the foliage, which is entire or toothed. Judging by De Candolle's

description of *B. cuneifolia*, there seems no doubt of its being the present plant, and that the habitats of Brazil and Monte Video are erroneous.

One of the most abundant plants in the Falkland Islands, growing with *Empetrum rubrum*. It appears to migrate northwards from the Strait of Magalhaens as far as Maldonado on the eastern, and Chiloe on the western coast of South America.

2. BACCHARIS *Patagonica*, Hook. et Arn. *in Bot. Journ.* vol. iii. p. 29.

HAB. Strait of Magalhaens; Port Famine, *Capt. King, Capt. Sulivan*; Cape Negro, *C. Darwin, Esq.* Staten Land, *Mr. Webster*.

Apparently a rare species, for I have seen it from no other part of Fuegia and Patagonia, or collected by any other naturalists but those mentioned above. The whole plant is much larger than *B. Magellanica*, and not viscid, the leaves are sinuato-lobate towards the summit, opaque, and often turn black in drying; in other respects it is very near it.

6. MADIA, *Mol.*

1. MADIA *sativa*, Molin. *Hist. Chili*, p. 336. *DC. Prodr.* vol. v. p. 691. M. viscosa, *Hook. et Arn. in Comp. Bot. Mag.* vol. iii. p. 51. *Cav. Ic.* vol. iii. p. 50. t. 298.

HAB. Strait of Magalhaens, Cape Negro, *C. Darwin, Esq.*

This is the "Madi" and "Melosa" of the Chilians, who extract an oil from the seed, for which purpose it is cultivated abundantly both in that country and in other parts of America.

7. ABROTANELLA, *Cass.*

1. ABROTANELLA *emarginata*, Cassini, *Dict.* vol. xxxvi. p. 27. *Opusc. Phyt.* vol. ii. p. 42. *Gaud. in Freyc. Voy. Bot.* p. 465. *DC. Prodr.* vol. vi. p. 141. *Fl. Ant.* pt. 1. p. 24 *in observ.* Oligosporus emarginatus, *Cass. in Annal. Sciences Nat.* vol. v. p. 104. t. 3. f. 4. *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 644.

HAB. Strait of Magalhaens, Port Famine, *Capt. King*. Hermite Island, Cape Horn, *J. D. H.* Falkland Islands, abundant, *Gaudichaud, J. D. H.*

A very inconspicuous plant, allied to *Ceratella* and *Trineuron* of the 'Flora Antarctica' (Pt. 1. p. 24.), and also to an unpublished Tasmanian genus. It is easily recognized by the curious scarious margins of the leaves, which are broad and bifid at the apex.

8. LEPTINELLA, *Cass.*

1. LEPTINELLA *plumosa*, Fl. Antarct. pt. 1. p. 26. t. xx.

HAB. Kerguelen's Land, abundant near the sea, *Anderson in Cook's 3rd Voyage, J. D. H.*

Some observations on these specimens are in the work quoted above. The species is found on the American continent, and is one of the few plants common to Lord Auckland's Group and Kerguelen's Land which do not exist in Fuegia.

2. LEPTINELLA *scariosa*, Cass. *Bull. Phil.* 1822. p. 127. *Dict. Sc. Nat.* vol. xxvi. p. 67. *DC. Prodr.* vol. vi. p. 141. *Fl. Antarct.* pt. 1. p. 28. *in obs.* L. (?) acæoides, *Hook. et Arn. in Bot. Journ.* vol. iii. p. 325. Cotula reptans, *Banks et Sol. MSS. in Mus. Banks. cum icone.*

Fitch, del et lith.

Reeve Brothers, imp.

Gnaphalium spicatum, Lam.

Hab. Tierra del Fuego, from the Strait of Magalhaens to Cape Horn; *Banks and Solander* and all future voyagers.

Apparently abundant from Valdivia to Cape Horn; the specimens from the northern locality being much the largest.

9. GNAPHALIUM, *L.*

1. Gnaphalium *spicatum*, Lam.; caule erecto v. ascendente simplici v. e basi ramoso pube arcte appresso-cano, foliis anguste oblongo-spathulatis inferioribus plerumque latioribus superioribus sub-decurrentibus super glabriusculis arachnoideisve, subter dense appresso-canis subargenteisve marginibus planis undulato-crispatulisve floralibus brevioribus linearibus. G. spicatum, *Lam. Encycl.* vol. ii. p. 757. *DC. Prodr.* vol. vi. p. 232. *Hook. et Arn. in Bot. Beechey*, p. 31. *Bot. Journ.* vol. iii. p. 328. G. coarctatum, *Willd. Sp. Pl.* vol. iii. p. 1886. *H. B. K. Nov. Gen. Am.* vol. iv. p. 86. G. sphacelatum, *H. B. K. Nov. Gen. Am.* l. c. *Dill. Hort. Elth.* f. 133. G. consanguineum, *Gaud. in Ann. Sc. Nat.* vol. v. p. 105 *et in Freyc. Voy. Bot.* p. 467. *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 610, *non Homb. et Jacq. in Voy. au Pole Sud.* (Tab. CXIII).

Var. β, *Chonoticum*, foliis omnibus in petiolum elongatum angustatis floralibus elongatis patentibus, floribus in capitulis subsessilibus aggregatis.

Hab. Falkland Islands; *Gaudichaud, D'Urville* and all succeeding voyagers. Var. β, Chonos Archipelago; *C. Darwin Esq.*

One of the most variable and abundant of South American plants, from the latitude of Quito to the Falkland Islands, also occurring in Brazil.

I am inclined to consider the *G. spicatum* as the typical form of a species to which *G. Americanum*, *G. purpureum*, *G. Pennsylvanicum* (?), and probably several other North American forms should be referred, and from which they differ no more than do *G. strictum*, *Norvegicum*, &c., from the *G. sylvaticum* of Europe. Authentic specimens of *G. purpureum*, which I have studied, are preserved in the British Museum, with Dillenius' hand-writing attached to them, and they accord perfectly with the figure in 'Hortus Elthamensis.' The plant is common in the middle and southern states of North America, and is very evidently a variety of the following, *G. Americanum*, which is generally more branched, with broader leaves and the inflorescence more elongated. It is a species of California and the southern United States, whence I have examined individuals with the woolly substance as appressed to the stem and under side of the leaves as in many Chilian ones of *G. spicatum*. Bertero's Chilian specimens of *G. Berterianum* are apparently *G. purpureum*, between which and *G. fulcatum* (through the varieties of the latter plant enumerated in De Candolle's 'Prodromus') there seems very little tangible specific difference.

An examination of copious suites of specimens of De Candolle's spicate group of *Gnaphalium* certainly rather tends than otherwise to the union of about sixteen species which it contains (as conjectured by Hooker and Arnott in the 'Botanical Journal'), and to reduce them to perhaps two, one of them, *G. sylvaticum*, being European, and the other (of which *G. spicatum* is the type) American. Generally speaking, the two forms, of the old and new world, are sufficiently distinguishable by the eye, though I should feel it difficult to give a definition of either that would include all states of one and exclude all of the other. If future observations confirm this supposition, a question will arise respecting the specific name; the oldest, or Linnæan (*G. purpureum*) applying to the variety, if that be called variety which is the less developed state of a plant more widely diffused under another form. The trivial appellation of *G. spicatum*, again, though not botanically speaking strictly correct, is characteristic of all the aspects of both the European and American plants, and that of *G. Americanum* appears even more suitable to a plant so particularly abundant in both divisions of the new world.

The variety β, *Chonoticum*, seems intermediate between this and the following, the woolliness being that of *G. spicatum*, while the capitate heads of flowers are similar to those of *G. falcatum*.

PLATE CXIII. *Fig.* 1, receptacle and involucral leaves; *fig.* 2, a flower of the ray; *fig.* 3, a flower of the disc; *fig.* 4, a seta of the pappus; *fig.* 5, ripe achænium:—all *magnified*.

2. GNAPHALIUM *falcatum*, Lam.; *Encycl.* vol. ii. p. 758. *Lessing in Linnæa*, vol. vi. p. 229. *DC. Prodr.* vol. vi. p. 233. *Hook. et Arn. in Bot. Journ.* vol. iii. p. 328. G. Chilense, *Hook. et Arn. in Bot. Beech.* p. 31. G. littorale, *Banks et Sol. in Mus. Banks. cum icone.*

HAB. Port Famine; *Capt. King.* Good Success Bay; *Banks and Solander.*

I have refrained from uniting the present with the foregoing species, being unable to arrange the Chilian forms of this genus so as to follow the transition steps by which they pass one into another, without even a fuller series of specimens than I have had the opportunity of consulting. I am fully satisfied however, that neither habit of growth, nor foliage, nor inflorescence affords any characters to separate them.

3. GNAPHALIUM *affine*, D'URV.; totum lana laxa molli vestitum, caule gracili herbaceo basi procumbente valde ramoso folioso, ramis florentibus ascendentibus erectisve gracillimis parce foliatis, capitulis paucis terminalibus aggregatis anguste cylindraceis, squamis involucralibus lanceolatis acuminatis basi pedicellis foliisque bracteiformibus lana immersis. G. affine, *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 610. *Gaudichaud in Freyc. Voy. Bot.* p. 134. *DC. Prodr.* vol. vi. p. 134. G. consanguineum, *Homb. et Jacq. in Voy. au Pole Sud, Bot. Dicot. Phan.* t. 11. T (?) *non Gaudichaud.*

HAB. Falkland Islands; *D'Urville, J.D.H.* Peckett Harbour, Strait of Magalhaens; *Hombron and Jacquinot?*

Caules basi sublignosi, prostrati, ramosi. *Folia* obovato-spathulata, utrinque molliter et laxe lanata, ¼–½ unc. longa. *Rami* florentes graciles, 2–3 unc. longi, folia 3–4 gerentes, apice curvati et floriferi. *Capitula* angusta, sub 2 lin. longa, pauciflora, involucri squamis nitidis supra medium subcastaneo-fuscis.

This appears to me a very distinct species from *G. spicatum* and indeed from any of its congeners, and may readily be recognized by its small size, and slender nearly leafless flowering stems, whose drooping apices bear but two or three capitula. The latter are elongated, narrow, and their scales close together after the seeds have fallen, forming an acuminated point to the capitulum.

The figure of *G. consanguineum*, Gaud., given by Hombron and Jacquinot, appears to belong to this plant, of which I have seen no specimens from the continent of South America or Fuegia.

4. GNAPHALIUM *Antarcticum*, Hook. fil.; pumilum glaberrimum, caule basi decumbente folioso sursum erecto gracili curvato parce foliato, capitulis subcapitatis majusculis, involucri foliolis lanceolatis acuminatis scariosis glaberrimis nitidis pallide brunneis, pappo basi subpiloso, achæniis glaberrimis. (TAB. CXIII. B.)

HAB. Falkland Islands; amongst grass &c. very sparingly; *J. D. H.*

Planta perpusilla 1–2-pollicaris, tota glaberrima. *Caulis* tenuis basi decumbens foliosus. *Folia* sub ½ unc. longa, patentia, anguste obovato-spathulata, integerrima, subacuta, nervo medio super depresso, utrinque viridia, siccitate fusco-brunnea. *Caulis* floriferus subfiliformis, foliis 2–3 linearibus auctus. *Capitula* 2–5, rarius solitaria, pro planta majuscula, ¼ unc. longa, subcylindracea. *Involucri* squamæ anguste lanceolatæ, acuminatæ, scariosæ. *Flores* albi?; apicibus dentium corollæ glandulosis. *Achænium* glaberrimum.

A very minute species, which at one time I was inclined to consider a seedling state of *G. spicatum*, but the whole plant is perfectly glabrous, the stems very slender, the capitula aggregated at the apex of the stem and much smaller than those of *G. spicatum*.

I regret having found but few specimens of this very minute *Gnaphalium*, they were quite concealed amongst the stems of grasses and other herbs.

PLATE CXIII. B, *Fig.* 1, a flower of the disc; *fig.* 2, a flower of the ray:—both *magnified*.

5. GNAPHALIUM *luteo-album*, Linn. *Sp. Pl.* 1196. *Engl. Bot.* t. 1002. G. inornatum, *DC. Prodr.* vol. vi. p. 225?

HAB. Chonos Archipelago; *C. Darwin, Esq.*

This plant seems identical with Hartweg's n. 314 of Mexico, which Mr. Bentham has named *G. inornatum*, DC., but I can distinguish neither from European and N. American specimens of *G. luteo-album*, which is a very frequent inhabitant of the warmer and temperate parts of the globe.

10. MELALEMA, *Hook. fil.*

Capitulum discoideum, multiflorum, heterogamum; flosculis marginalibus pauciseriatis, tenuissimis, fœmineis, ore oblique truncato; centralibus hermaphroditis, 5-dentatis. *Receptaculum* nudum, planum, papillosum. *Involucrum* subhemisphæricum; squamis 2-3-serialibus, linearibus, superne atro-sphacelatis, exterioribus brevioribus. *Styli* rami apice truncati, penicillati. *Achænia* breviter oblonga, striata, glaberrima. *Pappus* multiserialis, pilis vix scaberulis.—Herba Fuegiana *ramosa foliosa dense cæspitosa; ramis foliosis*; foliis *imbricatis spathulatis subter argenteo-lanatis*; capitulis *terminalibus solitariis inter folia summa sessilibus*; flosculis *flavis*.

1. MELALEMA *humifusa*, Hook. fil. Baccharis humifusa, *Banks et Solander MSS. in Mus. Banks. cum icone.*

HAB. Tierra del Fuego, Good Success Bay; *Banks and Solander, C. Darwin, Esq.*

Caulis prostratus, diametro pennæ corvinæ, basi descendente, fibras plurimas elongatas emittente, superne e lapsu foliorum cicatricatus vaginisque foliorum obtectus, pluries divisus. *Rami* ascendentes v. erecti, 1–2-pollicares, dense foliosi. *Folia* 3–4 lin. longa, basi arcte imbricata, patentia, spathulata, obtusa, subter tomento appresso argenteo-candida, super nisi versus apices glabrata, coriacea, subenervia. *Capitula* inter folia summa inconspicua, 3 lin. longa, late campanulata v. subhemisphærica. *Involucri* squamæ exteriores dorso arachnoideo-tomentosi, apicibus acuminatis atris. *Flosculi* plurimi. *Pappus* setis flexuosis.

In the sphacelated apices of the involucral scales, this genus approaches *Senecio*, from which it essentially differs in the form of the florets of the circumference, which refers it to DeCandolle's second division *Erechtitæ* of the *Senecioneæ*. Its habit and foliage are different from other Antarctic plants, though it resembles some alpine *Compositæ* of New Zealand.

11. CULCITIUM. *H. B. K.*

1. CULCITIUM *Magellanicum*, Homb. et Jacq.; totum sericeo-tomentosum, foliis radicalibus linearilanceolatis v. anguste linearibus elongatis acutis appresse sericeis super canaliculatis marginibus revolutis basi longe vaginatis scariosis glaberrimis, scapo elongato monocephalo bracteolato, bracteolis linearibus, capitulo solitario hemisphærico nutante v. inclinato, involucri squamis dense lanatis linearibus disco

brevioribus apicibus sphacelatis. C. Magellanicum, *Homb. et Jacq. in Voy. au Pole Sud, Bot. Dicot.* t. 11. f. 10. Senecio Magellanicus, *Hook. et Arn. in Bot. Journ.* vol. iii. p. 343.

Hab. Strait of Magalhaens; Port Famine, *Capt. King.* Cape Negro; *C. Darwin, Esq.*

Statura variabilis, 3-pollicaris ad pedalem. *Folia* 1½ ad 4 unc. longa, 1–3 lin. lata, plantis humilioribus latiora, fasciculata, erecta, substricta. *Scapi* dense lanati. *Capitula* ¾ ad 1 unc. diametro.

I quite agree with the authors of the Botany of the 'Voyage au Pole Sud', in referring this handsome plant to *Culcitium*, of which genus it is the most southern species.

12. SENECIO, *L.*

§ I. Discoideæ, *lanatæ.*

1. Senecio *candidans*, DC., *Prodr.* vol. vi. p. 412. Cacalia candidans, *Vahl, Symb.* vol. iii. p. 91. t. 71. *Gaud. in Ann. Sc. Nat.* vol. v. p. 103, *et in Freyc. Voy. Bot.* p. 135. *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 610 (sub nomine *candicans*). Cacalia lanuginosa, *Banks et Sol. MSS. in Bibl. Banks. cum icone.* "Plante à feuilles de bouillon blanc", *Pernetty Voy.* vol. ii. p. 60. (Tab. CIX.)

Hab. Strait of Magalhaens, throughout Fuegia and the Falkland Islands; abundant, on sandy beaches.

This species is most allied to one of the radiate group, the *S. Smithii*, DC. It abounds wherever sandy beaches occur, from Cape Fairweather on the Patagonian coast, to the south part of Tierra del Fuego. In the Falkland Islands it forms a rank herbage about a yard high in such situations.

Plate CIX. *Fig.* 1, receptacle and portion of the involucre; *fig.* 2, a flower; *fig.* 3, setæ of the pappus; *fig.* 4, stamens; *fig.* 5, ripe achænium:—*all magnified.*

2. Senecio *Patagonicus*, Hook. et Arn.; fruticosus, arachnoideo-tomentosus, foliis lineari-oblongis oblongo-lanceolatisve subacutis integerrimis supra medio canaliculatis marginibus revolutis, capitulis corymbosis longius pedicellatis 5–7-cephalis, involucri late campanulati calyculati foliosis lineari-oblongis subacutis fuscescentibus corollis brevioribus. S. Patagonicus, *Hook. et Arn. in Bot. Journ.* vol. iii. p. 344.

Var. *α*, foliis linearibus lineari-oblongisve.

Var. *β*, foliis oblongo-v. linearri-lanceolatis. S. Hookeri, *Homb. et Jacq. Voy. au Pole Sud, Bot. Phan. Dicot.* t. 13. A.

Hab. Var. *α*, Port Famine; *Capt. King.* Var. *β*, Strait of Magalhaens; *MM. Hombron and Jacquinot.*

Rami teretes, lana appressa vestiti. *Folia* omnia integerrima, uncialia, nunquam exemplaribus meis fasciculata. *Capitula* ½ unc. longa et lata.

This species may be recognized by the quite entire somewhat rigid and subereet leaves, by the elongated pedicels of the capitula, which are rather rounded at the base, half an inch long and equally broad. The leaves in MM. Hombron and Jacquinot's figure of *S. Hookeri* are somewhat fasciculate; the same state was gathered at Cape Fairweather both by Capt. King and Mr. Darwin.

3. Senecio *Andersoni*, Hook. fil.; caule ascendente suffrutescente? laxe lanato, foliis suberectis patulisve anguste lineari-oblongis lineari-lanceolatisve subflaccidis acutis acuminatisve integris v. apicem versus lobatis marginibus recurvis laxe arachnoideo-lanatis, capitulis paucis majusculis longe et graciliter pedicellatis, involucri late campanulati foliolis linearibus arachnoideis glabriusculisve disco brevioribus.

Fitch, del. et lith.

Senecio candidans, DC.

Reeve Brothers imp.

Var. *α*, foliis latioribus inferioribus superne dilatatis lobatis.

Var. *β*, foliis anguste linearibus acuminatis integerrimis, involucri squamis glabriusculis angustioribus.

Hab. *α* and *β*, Strait of Magalhaens, Port Famine; *Capt. King*.

Folia 1½–2 unc. longa, integerrima v. versus apices dilatata et 2–4-lobata, acuta v. acuminata, lana decidua. *Pedicelli* 2–3 unc. longi. *Capitula* ½ unc. longa.

Distinguished from the foregoing, of which it may eventually prove a variety, by the larger and more flaccid foliage, by the very long and slender pedicels, the somewhat larger capitula, and narrower involucral scales.

4. Senecio *Danyausii*, Homb. et Jacq.; caule suffrutescente gracili basi ramoso laxe lanato, foliis fasciculatis linearibus lineari-oblongisve subacutis integerrimis v. apice grosse dentatis marginibus revolutis subter præcipue lanatis, capitulis parvis corymbosis pedicellatis campanulatis medio constrictis, involucri squamis linearibus subacutis arachnoideis disco brevioribus. S. Danyausii, *Homb. et Jacq.* l. c. t. 13. B.

Var. *α*, foliis integerrimis, capitulis majoribus.

Var. *β*, foliis apice dentatis lobatisve, capitulis minoribus.

Hab. Strait of Magalhaens, var. *α*, Port Peckett; *MM. Hombron and Jacquinot*. Var. *β*, Port Peckett; *H. and J.* Port Gregory; *Capt. King*.

Caules exemplaribus meis varietatis *β* spithamæi, foliosi. *Folia* ½–⅔ unc. longa, superiora integerrima, pleraque apicem versus 1–3-dentata v. lobata. *Pedicelli* uncíales, graciles. *Capitula* ¼ unc. longa, medio ex involucri foliolis paulo inflexis constricta.

The figure of the var. *β*, given in the work quoted above, is very characteristic of Capt. King's specimens, but it may belong to a different species from the *S. Danyausii*, in which the capitula are represented larger and not constricted at the mouth of the involucre. A very extensive suite of the Magellanic *Senecliones* is required to settle the limits of the species, if they really are limited, for every different locality seems to furnish a form not found in another.

5. Senecio *floccidus*, Homb. et Jacq. *in Voy. au Pole Sud, Bot. Dicot. Phan.* t. 12. e.

Hab. Strait of Magalhaens, *MM. Hombron and Jacquinot*.

I do not recognize this species amongst those from South Chili, Fuegia and Patagonia that I have examined.

6. Senecio *exilis*, Homb. et Jacq. l. c. t. 13. C.

Hab. Strait of Magalhaens, Port Peckett; *MM. Hombron and Jacquinot*.

7. Senecio *Lasèguei*, Homb. et Jacq. l. c. t. 13. D.

Hab. Strait of Magalhaens, Port Peckett; *MM. Hombron and Jacquinot*.

I am quite ignorant of these two species, which seem to belong to this section, but of which no descriptions have hitherto appeared.

§ II. Discoideæ, *glabratæ v. glaberrimæ*.

8. Senecio *vulgaris*, Linn. *Sp. Pl.* n. 1216. *Engl. Bot.* t. 747.

Hab. Falkland Islands; abundant, but undoubtedly introduced.

This plant is certainly not indigenous to the Southern Hemisphere; but carried to the Falkland Islands, where it is widely dispersed.

9. Senecio *Kingii*, Hook. fil.; herbaceus, glaberrimus, caule simplici brevi decumbente folioso scapigero, foliis petiolatis ad apicem caulis fasciculatis carnosis lineari-spathulatis grosse dentatis, scapo recto solitario 1-cephalo foliis 2–3 subulatis aucto superne puberulo, capitulo late campanulato, involucri squamis glaberrimis lineari-lanceolatis disco brevioribus.

Hab. Strait of Magalhaens, Port Famine; *Capt. King*.

Caulis 1–2-pollicaris, teres, crassitie pennæ corvinæ, basi decumbente nudo, apice ascendente folioso. *Folia* perplurima, fasciculata, basi vaginantia et imbricata, 1–1½-uncialia, gradatim dilatata, grosse serrato-dentata, plana. *Scapus* erectus, teres, siccitate sulcatus, 3–4-pollicaris, foliis parvis subulatis filiformibusve auctus. *Capitulum* inclinatum, ½–¾ unc. longum, late campanulatum. *Involucri* squamæ lineari-lanceolatæ, glaberrimæ, sub 1-seriales basi squamulis paucis subulatis suffultæ, disco breviores.

Capt. King's specimens of this apparently distinct species are the only ones I have ever seen, it is truly scapigerous, allied in habit to the *S. trifurcatus*, Less., which has radiate flowers, and still more nearly to *S. crithmoides*, H. and A., of Mendoza, which is suffrutescent and branched below.

10. Senecio *Arnottii*, Hook. fil.; glaberrimus v. obsolete glanduloso-puberulus, erectus, suffrutescens, ramis erectis foliosis simplicibus, foliis solitariis subfasciculatisve coriaceis late linearibus v. oblongo-lineari-lanceolatis acutis integerrimis marginibus revolutis costa subter puberula, corymbis terminalibus 4–12-cephalis, pedicellis elongatis foliolis subulatis bracteatis, capitulis late campanulatis, involucri squamis anguste lineari-lanceolatis acuminatis. S. limbardioides, *Hook. et Arn. in Bot. Journ.* vol. iii. p. 347.

Hab. Strait of Magalhaens, Port Famine; *Capt. King*.

Rami stricti, erecti, petioli pedicellique sub lente pube sparsa obscure glandulosa operti. *Folia* 1–1½ unc. longa, 2–3 lin. lata, sessilia, coriacea v. subcarnosula, plana v. plerumque marginibus recurvis, e ramulis axillaribus abbreviatis foliiferis quasi fasciculata. *Pedicelli* erecti, 1½–2-unciales, foliis subulatis linearibusve acuminatis bracteolati. *Capitula* ½ unc. longa, latiora quam longa.

Allied to *S. littoralis*, Gaud., a radiate-flowered species. One specimen from Chiloe, collected by Mr. Darwin, has broadly linear leaves, a few of which shew a tendency to become toothed towards the apex. The name of *S. limbardioides*, having been through inadvertence twice used in the Botanical Journal (l. c.), I have changed that of this species.

11. Senecio *longipes*, Hook. fil.; glabriusculus v. superne præcipue glanduloso-pubescens, ramis erectis simplicibus strictiusculis, foliis plerisque fasciculatis anguste linearibus filiformibusve acutis basi attenuatis apicem versus serratis marginibus revolutis, corymbis 3–7-cephalis, pedicellis valde elongatis, bracteolis subulato-filiformibus, capitulis late campanulatis, involucri squamis 1-serialibus glandulosis disco brevioribus.

Hab. Strait of Magalhaens, Port Famine; *Capt. King*.

Priori affinis sed gracilior, foliis multoties angustioribus dentatis pedicellisque valde elongatis.

All Capt. King's specimens agree in possessing much narrower leaves and longer pedicels than the former species, so that, though probably only varieties of one plant, I am unable to prove them so.

12. Senecio *miser*, Hook. fil.; suffruticosus, depressus, pubescenti-viscosus, caule ascendente ramoso cicatricato, ramis suberectis breviusculis foliosis, foliis coriaceis subcrispatis anguste lineari-spathulatis irre-

gulariter sinuato-dentatis subpinnatifidisve, marginibus reflexis, capitulis solitariis binis subcorymbosive breviter pedicellatis late campanulatis, involucri squamis anguste lanceolatis disco paulo brevioribus.

Hab. Strait of Magalhaens, Port Gregory; *Capt. King*.

Caulis lignosus, erassitie pennæ passerinæ, uncialis. *Rami* 3–4-pollicares, teretes. *Folia* plurima, parva, ½–¾ unc. longa, undulato-crispata, vix 2 lin. lata, inferne in petiolum angustata. *Pedicelli* ½–1 unc. longi, foliolis bracteolati. *Capitula* ½ unc. longa, ½ unc. diametro.

Port Gregory is described as surrounded by plains, which are covered with a short grass, and possess nothing but a herbaceous vegetation. These features are so different from those of Port Famine, that should the *Senecio Arnottii* be identical with *S. longipes*, and the latter be transported to this locality, the appearance it would probably assume is that of *S. miser*. That such may be the origin of the present plant is rendered still more likely, from an examination of Mr. Darwin's specimens of *S. tricuspidatus*, Hook., a discoid species, hitherto only gathered high up the river Santa Cruz in Patagonia. Mr. Darwin labels two very different looking individuals as belonging to this same species, the one large and leafy, with leaves broadly linear, dilated and deeply trifid at the apex, fully an inch or an inch and a quarter long, and the whole plant equally luxuriant with *S. Arnottii*, the other, again, has the squalid habit of *S. miser*, and foliage very similar in size, shape and texture. Nor is it in habit and foliage alone that the *Senecliones* are liable to vary. The difference between some of the discoid and radiate species is almost confined to the presence or absence of a ray, and this is so remarkably the case, that I have found an analogue to almost all the discoid species described above, amongst the radiate, and MM. Hombron and Jacquinot figure a Magellanic species bearing both radiate and discoid flowers on the same specimen. Now since the *S. Jacobæa* of England, and other European species, vary in having or wanting the ligulate florets, so may these of Patagonia and Fuegia, and thus still further reduce the number of species.

It is worthy of observation that the discoid *Senecliones* are almost peculiar to the drier soil and climate of Eastern Patagonia and Fuegia, only one (*S. candidans*), an inhabitant of sandy places, being a Fuegian and Falkland Island species. I am not prepared to say how far this favours the supposition that the absence of a ray may be due to causes now in operation, but the same remark applies to a certain extent to the *Senecliones* of other countries, and to the genus *Chiliotrichum* in Antarctic America.

There are several points connected with this genus of a much more interesting nature than the variation of its Protean species; such as the absence of characters in the species indicating natural groups; the scarcity of the species in Australia, which contains scarcely seventy, contrasted with their abundance in the Cape which possesses nearly two hundred; their absence in the Antarctic Islands south of New Zealand, and their forming upwards of twice the largest genus of flowering plants in the flora of Fuegia and Patagonia. A still more singular fact is the confined range * of the individual species, though belonging to one of the very largest genera that has an universal diffusion. Thus out of the twenty-one species to be enumerated in the present part, not one inhabits any other country but extra-tropical South America, except the introduced *S. vulgaris*. If the species are to be considered the offspring of variation, there must be allowed to *Senecio* what may be called a disposition to vary centrifugally, that causes the individuals to depart further and further from an original one in proportion as the genus spreads over the earth's surface. There is not with *Senecio*, as with the equally widely dispersed *Gnaphalium*, that tendency in the forms all countries present, to revert to a few typical species. The fact of the species of *Senecio* in each separate country being almost inextricable, may be cited in favour of variation as an agent producing what other naturalists suppose original creations. Against this hypothesis, however, it might be urged, that the *S. vulgaris* has shewn no tendency to vary during the eighty years which have, in all likelihood, elapsed since its first importation into the Falkland Islands.

* This is the more remarkable, for *Senecio* thus forms an exception to a very prevailing law in the animal and vegetable kingdoms, (first pointed out to me by my friend Mr. Darwin), that the individual species of large and widely diffused genera have generally themselves very wide ranges.

§ III. Radiatæ, *lanatæ*.

18. Senecio *Smithii*, DC.; caule herbaceo erecto cavo simplici superne corymboso foliisque subter v. utrinque laxe lanato, foliis radicalibus longe petiolatis oblongis basi cordatis subacutis dentatis petiolo basi vaginante caulinis cordatis lanceolatisve sessilibus acuminatis crenato-dentatis, corymbo terminali 6-polycephalo, capitulis amplis, involucris late campanulatis, ligulis 15–16 interdum elongatis apice acutis dilatatisve, pappo achænio breviore. S. Smithii, *DC. Prodr.* vol. vi. p. 412. Senecio verbascifolius, *Homb. et Jacq. in Voy. au Pole Sud, Bot. Dicot. Phan.* t. 12, A. Cineraria gigantea, *Smith Exot. Bot.* vol. ii. p. 11. t. 65. C. leucanthema, *Banks et Sol. MSS. in Mus. Banks. cum icone.*

Hab. Strait of Magalhaens; Port Famine, *Capt. King*. Cape Negro, *C. Darwin, Esq., MM. Hombron and Jacquinot*. Good Success Bay, *Banks and Solander*.

Herba tripedalis, facie *S. candidantis*. *Capitula* 1–2 unc. diametro. *Ligulæ* longitudine variæ, apice acutæ rotundatæ v. truncatæ et 3–5-fidæ. *Pappus* achænio maturo sulcato cylindraceo ½ unc. longo brevior.

A handsome species, very uncertain in the length and form of its ligulæ, which are in Capt. King's specimens an inch long, in Mr. Darwin's not half so much and according to the figure in the 'Voyage au Pole Sud' of a few-flowered specimen, sometimes shorter still. The cauline leaves also are variable in shape and in their woolliness. Capt. King gathered the same species (with several allied ones) *in* Chiloe, in fruit, the achænia are fully formed, but perhaps abortive, being slender, striated and longer than the pappus. The colour of the ray is remarkably pale for the genus, like that of *S. trifurcatus*, DC. MM. Hombron and Jacquinot assert that it is also a Cape of Good Hope species, which is exceedingly unlikely to be the case.

14. Senecio *Falklandicus*, Hook. fil.; frutescens, ramis pedunculis foliisque subter lana molli dense vestitis, foliis linear-oblongis oblongo-lanceolatis obovato-spathulatisve integerrimis repando-dentatisve apice callo subacuto terminatis marginibus revolutis super glabratis arachnoideisve, capitulis majusculis subsolitariis plerisque pedunculatis, pedunculis bracteatis, involucri late campanulati squamis sub 3-serialibus linearibus basi extus lanatis. S. littoralis, *var. a*, lanatus, *Gaud. in Ann. Sc. Nat.* vol. v. p. 104, *et in Freyc. Voy. Bot.* p. 468. *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 611. *Homb. et Jacq. in Voy. au Pole Sud*, t. 10. R.? (Tab. CX.)

Hab. Falkland Islands, very abundant, *Gaudichaud, C. Darwin, Esq., Capt. Sulivan, J. D. H.*

Frutex 1–4-pedalis, e basi ramosus. *Folia* juniore latiore, spathulata, in petiolum gracilem attenuata, 1½ unc. longa, ¾ unc. lata, parcius lanata, margine tenuiter revoluta, ramis senioribus angustiora, marginibus interdum usque ad costam revolutis. *Pedunculi* floccosi, plerique 2–3-unciales, monocephali. *Capitula* ampla, 1½ unc. diametro.

The present plant was supposed by both Gaudichaud and D'Urville to be a state of *S. littoralis*, from which it is however abundantly distinct, especially in its frutescent habit, and the broader, lanate and blunter leaves. Whether it be really different from the three following species is much more questionable; I am inclined to think it is not, however great their dissimilarity in habit. It differs again from the discoid *S. Patagonicus*, only in the presence of a ray and the peduncles being solitary. I am doubtful whether the figure of MM. Hombron and Jacquinot refers to this plant, their specimens are from the Strait of Magalhaens.

Plate CX. *Fig.* 1, receptacle; *fig.* 2, floret of the ray; *fig.* 3, arms of the style of the same; *fig.* 4, seta of pappus; *fig.* 5, floret of the disc; *fig.* 6, stamen; *fig.* 7, arms of the style of the same; *fig.* 8, ripe achænium:—all *magnified*.

Fitch. del. et lith.

Reeve Brothers, imp.

Senecio Falklandica, Hook fil.

15. Senecio *Darwinii*, Hook. et Arn. *in Bot. Journ.* vol. iii. p. 333. S. tricuspidatus, *Banks et Sol. in Mus. Banks. cum icone.*

Hab. Strait of Magalhaens, *Capt. King*. South part of Tierra del Fuego, *C. Darwin, Esq.* Good Success Bay, *Banks and Solander*. Hermite Island, Cape Horn, on the hills, *J. D. H.*

Humilis, caule lignoso, prostrato, valde et dense ramoso. *Folia* ut in priore, sed plerumque cuneata et trifida v. trilobata repando-dentatave. *Pedunculi* elongati v. inter folia summa sessiles.

Owing probably to the exposed situations this plant inhabits, it is of low stature and much branched from the base; except in these respects and the generally, but not continually more divided leaves, I cannot see how it is distinguishable from *S. Falklandicus*. The ray varies much in size.

16. Senecio *Eightsii*, Hook. et Arn. *in Bot. Journ.* vol. iii. p. 332.

Var. β, caule procumbente, ramis ascendentibus laxe foliatis, foliis 3–5-fidis, capitulis breviter pedunculatis.

Hab. Tierra del Fuego, Staten Land; *Mr. Eights, Mr. Webster*. Var. β, South part of Fuegia; *C. Darwin, Esq.*

A priore cui proximus differt, foliis minoribus angustioribus profunde trifidis, capitulisque parvis. Laciniæ foliorum latitudine variæ, interdum lineares.

The variety β seems in some measure intermediate between this species and the former. I have gathered, on the barren mountain-sides of Cape Horn, a state of *S. Darwinii* very closely approaching the present, but with flowers considerably larger than those of *S. Eightsii*.

17. Senecio *Websteri*, Hook. fil.; herbaceus, caule suberecto v. basi prostrato folioso lanato, foliis petiolatis carnosis reniformi-rotundatis deltoideisve angulis obtusis integerrimis sinuato-crenatisve carnosis super glabratis subter lana molli obtectis, marginibus revolutis, capitulis paniculatis, pedunculis pedicellisque laxe arachnoideo-tomentosis, involucri late hemisphærici squamis oblongo-lanceolatis acutis glabratis v. basi apiceque tantum lanatis, ligulis late ovatis tridentatis.

Hab. Staten Land; *Mr. Webster*.

Caulis exemplare a me viso manco 4 unc. longa, teres. *Petioli* unciales, uti folia subter caulisque laxe arachnoideo-lanati. *Folia* basi truncata v. cordata, latiora quam longa, 1 unc. lata, nervis subter flabellatis. *Pedunculi* brevissimi, hinc paniculæ subsessilis, lanati. *Capitula* aggregata, ½ unc. diametro. *Involucri* squamæ non sphacelatæ.

The most distinct species of the genus, if, as I suppose it to be, a *Senecio*, but Mr. Webster's specimens are very insufficient. The long petioles, singularly formed fleshy leaves and their revolute margins are decisive characters.

§ IV. Radiatæ, *glabriusculæ* v. *glaberrimæ*.

18. Senecio *trifurcatus*, Less. *Synops. Comp.* p. 391. *DC. Prodr.* vol. vi. p. 435. *Hook. et Arn. in Bot. Journ.* p. 341. Cineraria trifurcata, *Spreng. Syst. Veg.* vol. iii. p. 551. Tussilago trifurcata, *Forst. Comm. Gott.* vol. ix. p. 38. Aster trifurcatus, *Banks et Solander MSS. in Mus. Banks. cum icone.* (Tab. CVIII).

Hab. Tierra del Fuego; abundant in marshy places on the mountains from Port Famine to Cape Horn, *Banks and Solander*, and all succeeding voyagers.

The very pale colour of the ray of this plant seems to have deceived the older authors in regard to its genus. In this respect it differs from the majority of *Senecciones*, as also in the apices of the involucral scales not being sphacelated. It is allied to the discoid *S. Xingii*, mihi.

Plate CVIII. *Fig.* 1, receptacle; *fig.* 2, floret of ray; *fig.* 3, arms of style, and *fig.* 4, pappus of ditto; *fig.* 5, floret of disc; *fig.* 6, stamens, and *fig.* 7, arms of style and ditto; *fig.* 8, achænium:—all *magnified*.

19. Senecio *acanthifolius*, Homb. et Jacq.; herbaceus, erectus, glabriusculus v. pubescens, caule simplici sulcato, foliis inferioribus longe petiolatis oblongo-ovatis basi cordatis sœpe marginea lobatis lobis grosse crenatis petiolis subalatis basi vaginantibus superioribus sessilibus semi-amplexicaulibus, capitulis corymbosis, involucri campanulati squamis glabriusculis sub 1-seriatis. S. acanthifolius, *Homb. et Jacq. Voy. au Pole Sud, Bot. Dicot. Phan.* t. 11. S. Cineraria purpurascens *et* C. leucanthema, *Banks et Sol. MSS. in Mus. Banks. cum iconibus*.

Hab. Strait of Magalhaens; *Hombron and Jacquinot*. Port Famine, *Capt. King*; Good Success Bay; *Banks and Solander*. South part of Fuegia, *C. Darwin, Esq.*; Hermite Island, Cape Horn, *J. D. H.*

Herba bipedalis, sylvicola, succulenta. *Caulis* subfistulosus. *Folia* inferiora uno cum petiolo 6–8 unc. longa, lamina petiolo subæquilonga, læte viridis, subter sæpe discolor et purpurascens. *Pedunculi* unciales, bracteolis foliaceis subulatisque aucti. *Capitula* 1–1½ unc. diametro, pallide straminea, disco intensiore.

A very handsome species, abundant in the woods of Fuegia.

20. Senecio *cuneatus*, Hook. fil.; herbaceus, glaberrimus, caule ascendente sulcato inferne folioso, foliis plerisque in ramis abbreviatis dispositis obovato-spathulatis basi cuneatis in petiolum attenuatis grosse et irregulariter dentatis subcoriaceis, caule superne longe nudo apice corymbifero, corymbo triephalo, capitulis pedicellatis, pedicellis basi unifoliatis, involucri campanulati squamis linearibus glaberrimis uniseriatis.

Hab. Strait of Magalhaens; Port Famine, *Capt. King*.

Caulis crassitie pennæ anatinæ, herbaceus. *Rami* axillares, abbreviati, superiores elongati, floriferi. *Folia* patula, plana, subcoriacea, siccitate nigrescentia, 1½ unc. longa, ½ lata. *Pedunculus* caule continuus, elongatus, nudus, 3-unicialis, erectus, apice 3-cephalus. *Pedicelli* basi folio unico aucti, inferiore unciali. *Capitula* ½ unc. longa, ½ lata, basi bracteolis paucis suffulto.

Apparently a most distinct species, of which I have but a very imperfect specimen, collected by Capt. King; it resembles the *S. nigrescens* H. and A., of South Chili, but the foliage is different.

21. Senecio *littoralis*, (exclud. var. *a*, lanatus,) Gaud., *in Ann. Sc. Nat.* vol. v. p. 104, *et in Freyc. Voy. Bot.* p. 468. *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 611. *DC. Prodr.* vol. vi. p. 412. *Hook. Ic. Plant.* t. 494. S. vaginatus, *Hook. et Arn. in Bot. Journ.* vol. iii. p. 331.

Hab. Falkland Islands, very abundant; *Gaudichaud*, and all subsequent collectors.

As is stated under the *S. Falklandicus*, the varieties *a* and *β* of *S. littoralis* belong to two very different species. The one for which I have retained the name, is generally a maritime plant, usually growing in marshy places and never altogether woolly, or more so in its youngest state than when older. The leaves are extremely variable, straight or falcate, obtuse or generally acute, one line to nearly one third of an inch broad, strictly linear or obovato-lanceolate, sometimes, though rarely, obscurely sinuato-dentate.

Nassauvia serpens D'Urv

Pauli del et lith.

Reeve Brothers imp.

A fully grown plant of this is very handsome; I possess a specimen only a foot high, and with a simple stem, though branching so copiously above as to bear upwards of a hundred flowers, all fully blown and each nearly an inch and a half in diameter.

13. CHEVREULIA, *Cass.*

1. CHEVREULIA *lycopodioides*, DC. *Prodr.* vol. vii. p. 45. Gnaphalium lycopodioides, *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 610. *Gaud. in Freyc. Voy. Bot.* p. 135.

HAB. Falkland Islands, on dry grassy places, rare; *D'Urville, J. D. H.*

A scarce species, as far as I have observed in the Falkland Islands, and exceedingly inconspicuous. My specimens are in an imperfect state.

14. NASSAUVIA, *Comm.*

1. NASSAUVIA *suaveolens*, Willd., *Sp. Pl.* vol. iii. p. 2396. *Lam. Illust. Gen.* t. 721. *Brongn. in Duperrey Voy. Bot. Phan.* t. 56. f. B. *DC. Prodr.* vol. vii. p. 49. N. Commersonii, *Cass. Dict. Sc. Nat.* vol. xxxviii. p. 457.

HAB. Strait of Magalhaens, *Commerson*; Port Famine, *Capt. King.*

2. NASSAUVIA *serpens*, D'Urville, *in Mém. Soc. Linn. Paris*, vol. iv. p. 610. *Lessing in Linnæa*, vol. v. p. 4. *Brongn. in Duperrey Voy. Bot. Phan.* t. 56. f. A. N. D'Urvillei, *Cass. Dict. Sc. Nat.* vol. xxxviii. p. 456. (TAB. CXIV.)

HAB. Falkland Islands, abundant, especially amongst loose quartz rocks on the hills; *D'Urville, Capt. Sulivan, Mr. Chartres, J. D. H.*

A very handsome and singular plant, almost confined to the "Streams of stones," which are those curious tracts of land covered with loose blocks of quartz, abounding in some parts of the Falkland Islands. There the *Nassauvia serpens* grows, sending its brittle stems, several fathoms long, down amongst the masses of rock, till they reach the soil, often at a considerable depth. The plant varies somewhat in the foliage, the leaves being suberect or recurved, and more or less silky.

PLATE CXIV. *Fig.* 1, capitulum; *fig.* 2, portion of receptacle and involucre; *fig.* 3, a floret; *fig.* 4, palea of the pappus; *fig.* 5, stamens; *fig.* 6, achænium:—all *magnified*.

3. NASSAUVIA *Gaudichaudii*, Cassini, *ex Gaudichaud in Ann. Sc. Nat.* vol. vi. p. 103. *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 609. *DC. Prodr.* vol. vii. p. 50. Mastigophorus Gaudichaudii, *Cassini, Dict. Sc. Nat.* vol. xxxiv. p. 222. *Gaud. in Freyc. Voy. Bot.* p. 470. *Homb. et Jacq. in Voy. au Pole Sud, Bot. Phan. Dicot.* t. 16. f. G.

HAB. Strait of Magalhaens, *MM. Hombron and Jacquinot.* Falkland Islands, *Gaudichaud, &c.*

A very abundant species, especially in the Falkland Islands, on rocks near the sea. I have never seen Fuegian or Magellanic specimens.

4. NASSAUVIA *pygmæa*, Hook. fil. Triachne pygmæa, *Cass. Bull. Philom.* 1818, p. 48. *Dict. Sc. Nat.* vol. xxxiv. p. 221. et vol. lv. p. 182. *Lessing Synops.* p. 397. *DC. Prodr.* vol. vii. p. 50. Crymatea rigida, *Banks et Sol. MSS. in Mus. Banks. cum icone.*

HAB. Strait of Magalhaens, *Commerson*; Port Famine, summit of Mount Tarn, *Capt. King*; Good Success Bay, *Banks and Solander*; south part of Tierra del Fuego, *C. Darwin, Esq.*

In general appearance the present plant so closely resembles *N. Gaudichaudii*, that at first sight it is difficult to distinguish them. Cassini describes the flowers as apparently yellow; but Mr. Anderson, who collected the plant during Capt. King's voyage, mentions that they are white. The genus *Trichne*, remarks De Candolle, hardly differs from *Nassauvia*, nor can I find any character by which to separate them.

15. PANARGYRUM, *Lag.*

1. PANARGYRUM *Darwinii*, Hook. et Arn.; cæspitosum, basi ramosum appresse sericeum, ramis florentibus elongatis superne scapæformibus parce foliatis, foliis lineari-subulatis pungentibus integerrimis marginibus obscure revolutis, capitulis ad apices ramulorum capitato-congestis foliis subulatis bracteatis, pappo uniseriali plumoso. P. Darwinii, *Hook. et Arn. in Comp. Bot. Mag.* vol. ii. p. 48. an P. Lagascæ, *DC. Prodr.* vol. vii. p. 54?

HAB. Strait of Magalhaens; Port Gregory, *Capt. King.*

Caules basi lignosi, ramis foliaceis 1–8-uncialibus, florentibus bis longioribus. *Folia* ½–¾ unc. longa, sub 1–1½ lin. lata, erecta v. sub-patentia, utrinque sericea. *Rami* florentis pars superior stricta, erecta, tetes, sublanuginosa. *Capitulorum* fasciculus ½–1 unc. diametro. *Corollæ* conspicuæ, albidæ?

A very distinct species, also found at Port Desire by Mr. Darwin. The woody group of *Nassauvia*, to which the present plant belongs, is nearly peculiar to South America, and to the drier parts of that continent, especially of South Chili and Patagonia; they do not cross the Strait of Magalhaens on the western side, but on the east a few stretch down to Port Gregory, Staten Land, and the Falkland Islands. I have appended the description of an allied Patagonian plant, which forms a new genus.*

2. PANARGYRUM *abbreviatum*, Hook. et Arn.; cæspitosum, glabriusculum, basi ramosum, substoloniferum, foliis imbricatis rigidis patenti-recurvis linearibus acuminatis mucronatis integerrimis glaberrimis basi vaginantibus axillis sericeis, capitulis ad apices ramorum congesto-capitatis sessilibus, pappo plumoso. P. abbreviatum, *Hook. et Arn. in Comp. Bot. Mag.* vol. ii. p. 48.

HAB. Strait of Magalhaens; Port Gregory, *Capt. King.*

Rami unciales, subercti v. prostrati, foliosi. *Folia* ¼ unc. longa, planiuscula v. super concava, dorso medio costata, superiora interdum subspathulata, marginibus incrassatis, vagina basi subciliata. *Capitulorum* fasciculus hemisphæricus, 1 unc. diametro. *Pappus* involucrum superans plumosus.

I have seen only one specimen of this species, gathered by Capt. King; it is very distinct from its congeners.

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* TRIANTHUS, *N. G.*

Capitulum radiatiforme, compressum, æqualiflorum, sub3-florum. *Involucrum* biseriale; squamis paucis; exterioribus ovato-lanceolatis, acuminatis, pungentibus, carinatis; interioribus 1–2, planiusculis, lineari-oblongis, acuminatis. *Receptaculum* parvum, nudum, papillosum. *Flores* hermaphroditi. *Corolla* labio exteriore late oblongo, apice tridentato; interiore linguæformi, revoluto, integerrimo. *Achænia* ob-pyramidata, erostria, villosa. *Pappus* 1-serialis, paleaceus, caducus; paleis 3–5, linearibus, angustis, inferne gradatim attenuatis, apice acutis, marginibus ciliato-plumosis.—Herba *lignosa, depressa, ramosa, glabriuscula*, Triptilioni *affinis*. Folia *subulata, patenti-recurva, pungentia, basi imbricata, late vaginantia, coriacea*. Capitula *ad apices ramulorum solitaria, inter folia sessilia*. Corollæ *albidæ*.

1. TRIANTHUS *ulicinus*, Hook. fil.

HAB. Patagonia; Cape Fairweather, *Capt. King.*

Clanonea Magellanica, D C.

Chaetanthera suaveolens, D C.

Reeve Brothers, imp.

16. CHABRÆA, *DC.*

1. Chabræa *purpurea*, DC. *in Ann. Mus.* vol. xix. p. 65. t. 5. *Mém. Labiatifl.* p. 13. t. 3. Lasiorrhiza purpurea, *Lessing, in Linnæa*, vol. v. p. 11. *Homb. et Jacq. in Voy. au Pole Sud, Bot. Monocot.* t. 4. H. Leucheria purpurea, *Hook. et Arn. in Comp. Bot. Mag.* vol. ii. p. 43. Perdicium purpureum, *Vahl, in Skrivt. Nat. Selsk.* vol. i. t. 3.

Hab. East coast of Tierra del Fuego, *C. Darwin, Esq.* Strait of Magalhaens, *MM. Hombron and Jacquinot.*

This species is also found on the S.E. coast of Patagonia.

2. Chabræa *suaveolens*, DC. *Prodr.* vol. vii. p. 59. *Hook. Ic. Plant.* t. 496. Perdicium suaveolens, *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 611. *Gaud. in Freyc. Voy. Bot.* p. 135. Lasiorrhiza ceterachifolia, *Cassini, Dict. Sc. Nat.* vol. xliii. p. 80. *Lessing in Linnæa*, vol. v. p. 11. L. viscosa, *Cass. l. c.* p. 81. Leucheria gossypina, *Hook. et Arn. in Comp. Bot. Mag.* vol. ii. p. 43. "Plante à odeur de Benjoin," *Pernetty Voy.* vol. ii. p. 57. (Tab. CXI.)

Hab. Falkland Islands, abundant; *D'Urville,* and all succeeding voyagers.

The odour of this plant, which is a great ornament to the grassy hills of the Falkland Islands, is decidedly that of *Benzoin*. It varies very much in stature and in woolliness or pubescence.

Plate CXI., right hand figure. *Fig.* 1, floret:—*magnified.*

17. MACRACHÆNIUM, *Hook. fil.*

Capitulum multiflorum, homogamum. *Involucrum* anguste campanulatum, squamis lineari-subulatis acuminatis sub-biserialibus exterioribus brevioribus. *Receptaculum* epaleaceum. *Corollæ* omnes glaberrimæ, hermaphroditæ, gracillimæ, breviter bilabiatæ, lobo exteriore 3-dentato 3-partitove, interiore bipartito, lobis revolutis. *Antheræ* elongatæ, basi bisetosæ, apice appendiculatæ, filamento geniculato sensim incrassato. *Stylus* ramis elongatis apice obtusis non truncatis. *Achænium* elongatum, cylindraceum, erostre, glaberrimum, striatum. *Pappus* setis subbiseriatis basi liberis longe plumosis.—Herba *Magellanica*, Chabrææ *affinis, subacaulis, scapigera*. Folia *runcinato-pinnatifida, subter lanata*. Scapus *erectus, elongatus, gracilis, monocephalus.*

1. Macrachænium *gracile*, Hook. fil.

Hab. Strait of Magalhaens; Port Famine, *Capt. King.*

Radix caulisque basis desunt. *Folia* longe petiolata, petiolo gracili, 2–3 unc. longo, alato, basi sensim in vaginam lanceolatam dilatato; lamina oblonga, membranacea, 2 unc. longa, 1 lata, runcinato-pinnatifida, lobis 4–6, hic illic grosse angulato-dentatis, super obscure puberulis, subter lana rufescente obtectis. *Scapus* 2-pedalis, gracilis, erectus, nudus, v. bracteolis 1–2 subulatis auctus. *Capitulum* nutans, 1 unc. longum. *Involucrum* basi conicum, squamis lanatis. *Corollæ* tubus ¼ unc. longus, gracillimus, teres, glaberrimus, labiis vix 2 lin. longis valde inconspicuis. *Antheræ* breviter exsertæ. *Pappi* setæ pallide rufescentes, patulæ. *Achænium* corollæ æquilongum.

I have seen only one specimen of this fine plant, which resembles a *Chaptalia* in habit, but appears most nearly related to *Chabræa*.

18. CLARIONEA, *Lag.*

1. Clarionea *Magellanica*, DC. *Mém. Mus.* vol. xix. p. 65. t. 3. Clarionella Magellanica, *Homb. et*

Jacq. Voy. au Pole Sud, Bot. Dicot. t. 10. f. T. Perezia Magellanica, *Lagasc. Amæn.* vol. i. p. 31. *Cassini, Opusc.* vol. ii. p. 164. *Hook. et Arn. in Comp. Bot. Mag.* vol. ii. p. 42. Perdicium Magellanicum, *Linn. fil. Suppl.* p. 376. *Vahl, in Skrivt. Nat. Selsk.* vol. i. p. 10. t. 4. P. sinuatum, *Banks et Sol. MSS. in Bibl. Banks. cum icone.* (Tab. CXI.)

Hab. South Chili and Fuegia. Cape Tres Montes, alt. 2,000 feet, *C. Darwin, Esq.* Port Famine, *Capt. King.* Hermite Island, Cape Horn, *J. D. H.* Staten Land, *Dr. Eights* and *Mr. Webster.*

Very variable in size, from two inches to a span or upwards.

Plate CXI., left hand figure. *Fig.* 1, floret; *fig.* 2, seta of pappus; *fig.* 3, stamens; *fig.* 4, arms of style:—all *magnified.*

19. HOMOIANTHUS, *DC.*

1. Homoianthus *echinulatus*, Cass. *in Dict. Sc. Nat.* vol. xxxviii. p. 458. *DC. Prodr.* vol. vii. p. 65. *Hook. Ic. Plant.* t. 491. Homanthis echinulata, *Homb. et Jacq. Voy. au Pole Sud, Bot. Dicot.* t. 10. f. S. Perezia recurvata, *Lessing, in Linnæa*, vol. v. p. 21. *Synops.* p. 412. P. Doniana, *Less. Synops.* p. 412. Perdicium recurvatum, *Vahl, in Skrivt. Nat. Selsk.* vol. i. p. 13. t. 7. *Gaud. in. Ann. Sc. Nat.* vol. vi. p. 103. *et in Freyc. Voy. Bot.* p. 135. *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 611. *non Don, et Poepp.* Chætanthera recurvata, *Spreng. Syst. Veg.* vol. iii. p. 503. Clarionea recurvata, *Don, in Linn. Soc. Trans.* vol. xvi. p. 206.

Hab. Strait of Magalhaens, *Commerson.* Port Famine and Port Gregory, *Capt. King.* Falkland Islands, very abundant, *Gaudichaud, Capt. Sulivan,* and all succeeding voyagers.

Rather a variable plant in size, in the glandular pubescence, in the number and size of the spinulæ on the leaves, which are in a single or double row, in the sharpness or bluntness of the leaves, and somewhat also in the form of the involucral scales. It is one of the most interesting plants of the Falkland Islands from the very sweet scent of its large pale-blue flowers, which has been compared to Jessamine and to Violets; it generally grows near the sea in rocky places, and has also been found on the S.E. coast of Patagonia. The *H. Beckii* (*Perezia*, Hook. et Arn.) of Patagonia is very nearly allied to this, but readily distinguished by the longer spinulose apex of the narrower leaves, and the recurved lower scales of the involucre. The leaves of the latter are exceedingly variable, sometimes wholly without marginal spinulæ, at others crested with white equidistant spinules much longer than those of *H. echinulatus.*

2. Homoianthus *Magellanicus*, DC., *Prodr.* vol. vii. p. 65. Aster Magellanicus, *Lam. Illust. Gen.* t. 681. f. 3. Perdicium lævigatum, *Banks et Sol. MSS. in Mus. Banks. cum icone.*

Var. β, *lactucoides*, duplo major, foliis paulo angustioribus. Perdicium lactucoides, *Vahl, in Skrivt. Nat. Selsk.* vol. i. p. 11. t. 5. Clarionea lactucoides, *Don, in Linn. Soc. Trans.* vol. xvi. p. 206. C. glaberrima, *Cass. Opusc.* vol. ii. p. 165. Perezia lactucoides, *Lessing, Synops.* p. 413.

Hab. Strait of Magalhaens, *Commerson.* Port Famine, *Capt. King.* Cape Negro, *C. Darwin, Esq.* Good Success Bay, *Banks and Solander.*

Two plants of very different stature have been brought together by De Candolle under the name of *H. Magellanicus*; except however in size, I am unable to distinguish them. Lamarck's figure is highly characteristic of the smaller variety, and Cassini's and Lessing's descriptions of the larger. The variety β alone is in Mr. Darwin's Herbarium, the other collections contain both. Sir J. Banks' specimen of the largest state is upwards of two feet high.

Fitch del. et lith.

Reeve Brothers, imp.

Macrorhynchus coronopifolius, Hook fil.

Taraxacum laevigatum, D. C.

20. ACHYROPHORUS, *Scop.*

1. ACHYROPHORUS *tenuifolius*, DC.; glabriusculus v. subaraneosus, caule simplici, foliis gramineis omnibus radicalibus filiformibus v. angustissime lineari-spathulatis lineari-lanceolatisve integerrimis sinuatis pinnatifidisve segmentis patentibus remotis linearibus, scapo monocephalo, involucri ovato-campanulati squamis linearibus lineari-lanceolatisve acuminatis plus minusve araneo-tomentosis basi sparse hispido-pilosis. A. tenuifolius, *DC. Prodr.* vol. vii. p. 94. Seriola tenuifolia, *Hook. et Arn. in Comp. Bot. Mag.* vol. i. p. 31. S. incana, *Hook. et Arn. l. c.* vol. ii. p. 42. Oreophila tenuifolia, *Don, MSS.*

HAB. Strait of Magalhaens; Port Gregory, *Capt. King*. Elizabeth Island, *C. Darwin, Esq.*

A very variable species in the foliage, which is narrow and grass-like. Mr. Darwin has gathered a variety at Port St. Julian on the Patagonian coast, with rather larger capitula, but which does not appear otherwise distinct; it is *Seriola incana*, H. and A. It has also been collected by Capt. King at Cape Fairweather.

2. ACHYROPHORUS *arenarius*, Gaud.; parce hispido-pubescens v. glabriusculus, radice elongata collo 1–3-cephalo, foliis omnibus radicalibus lineari-obovato-lanceolatis interdum anguste lineari-elongatis longe petiolatis obtusis acuminatisve sinuato-dentatis pinnatifidisve, scapo foliis longiore monocephalo nudo foliisve 1–2 aucto, involucri campanulati squamis araneo-tomentosis glabratisve exterioribus parce hispido-pilosis. A. arenarius, *DC. Prodr.* vol. vii. p. 95. Hypochœris arenaria, *Gaud. in Ann. Sc. Nat.* vol. v. p. 103, *et in Freyc. Voy. Bot.* p. 134 et 461. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 609. H. minima? *Willd. D'Urv. l. c.* Seriola apargioides, *Less. Hook. et Arn. in Comp. Bot. Mag.* vol. ii. p. 42. (TAB. CXII. *Dissection.*)

HAB. Strait of Magalhaens, Port Gregory, *Capt. King*. Falkland Islands, *Gaudichaud, D'Urville, C. Darwin, Esq., J. D. H.*

This again is a highly variable plant, the majority of the Falkland Island specimens scarcely agreeing with Gaudichaud's description (as given in Freycinet's Voyage), in which the peduncles are said to be elongated and branched, though in the notes on the species, M. Gaudichaud states that they are either branched or simple. Small specimens entirely coincide with D'Urville's character of *H. minima*? Willd. The other species of this genus, as *H. apargioides*, and *H. taraxacoides*, are, however, so variable that the character of the single or many-flowered peduncle loses its value as a mark whereby to distinguish them.

PLATE CXII., middle dissections. *Fig.* 1, plumose pappus; *fig.* 2, ripe achænium, transversely rugose:—both *magnified*.

21. TARAXACUM, *Hall.*

1. TARAXACUM *dens-leonis*, Desf.; Leontodon Taraxacum, *Linn. Sp. Pl.* n. 1122.

Var. *lævigatum*. T. lævigatum, *DC. Cat. Hort. Monsp.* p. 149. *Prodr.* vol. vii. p. 146. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 604. *Gaud. in Freyc. Voy. Bot.* p. 134. Leontodon Lycodon, *Banks et Sol. MSS. in Mus. Banks. cum icone.* (TAB. CXII.)

HAB. Fuegia, Good Success Bay, *Banks and Solander*. Falkland Islands, *D'Urville, J. D. H.*

This variety has also been collected at Port St. Julian on the Patagonian coast, by Mr. Darwin.

PLATE CXII., right hand figure. *Fig.* 1, floret; *fig.* 2, stamen; *fig.* 3, seta of pappus; *fig.* 4, ripe achænium:—all *magnified*.

22. MACRORHYNCHUS, *Less.*

1. MACRORHYNCHUS *pumilus*, DC.; parce villo albido hirsutus, foliis anguste lineari-elongatis subgramineis integerrimis sinuatis runcinato-pinnatifidisve, scapo foliis longiore, involucri squamis linearilanceolatis foliaceis extus glanduloso-hispidis. M. pumilus? *DC. Prodr.* vol. vii. p. 152. Taraxacum pumilum *et* T. coronopifolium, *Gaud. in Ann. Sc. Nat.* vol. v. p. 103, *et in Freyc. Voy. Bot.* p. 461. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 609. Macrorhynchus Chilensis, *Hook. et Arn. in Comp. Bot. Mag.* vol. ii. p. 42. Ixeris monocephala, *Cass. in Dict. Sc. Nat.* vol. xxxix. p. 389. Leontodon pubescens, *Banks et Sol. MSS. in Mus. Banks. cum icone.* (TAB. CXII. *sub nom.* M. coronopifolius.)

HAB. Falkland Islands, grassy places near the sea; *Gaudichaud, D'Urville, C. Darwin, Esq., J. D. H.*

This, again, appears a very Protean plant in the foliage, which is entire, sinuato-pinnatifid, or deeply pinnatifid with linear spreading segments. The plant varies from two to six inches long, and bears one or many scapes, all the parts being more or less clothed with a soft subtomentose pubescence; it has also been found at Cape Fairweather by Capt. King.

PLATE CXII., left hand figure. *Fig.* 1, receptacle; *fig.* 2, floret; *fig.* 3, stamens; *fig.* 4, achænium:—all *magnified*.

23. SONCHUS, *L.*

1. SONCHUS *oleraceus*, Linn. *Sp. Pl.* n. 1116.

HAB. Chonos Archipelago, *C. Darwin, Esq.*

Most probably migrated thither since the discovery of South America, from the adjacent coast. It is also naturalized in several parts of Patagonia.

24. HIERACIUM, *L.*

1. HIERACIUM *Antarcticum*, D'URV.; stolonibus nullis, foliis radicalibus lanceolato-spathulatis obtusis subacutisve basi in petiolum attenuatis obscure sinuato-dentatis glaberrimis v. parcissime pubescentibus caulinis paucis linearibus dentatis, caule nudiusculo patentim glanduloso-piloso superne subvilloso 2–3-floro, pedicellis obscure araneosis, involucri campanulati squamis linearibus pilis atris elongatis dense vestitis. H. Antarcticum, *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 608. *Gaud. in Freyc. Voy. Bot.* p. 134.

HAB. Falkland Islands, *D'Urville*; rocky places near the sea, *J. D. H.*

Folia exemplaribus Falklandicis uncialia, Patagonicis 3–4-pollicaria. *Caulis* 4–6 unc. longus. *Involucrum* ½ unc. longum.

I have described this species partly from my own specimens, which are very imperfect, and partly from others gathered in Patagonia (Cape Fairweather) by Capt. King, where a second species occurs of which a diagnosis is subjoined.*

* HIERACIUM *Patagonicum*, Hook.fil.; totum pilis patentibus hirtum, stolonibus nullis, foliis radicalibus oblongo-lanceolatis subacutis integerrimis in petiolum attenuatis caulinis paucis sessilibus angustioribus obscure et remote dentatis, caule erecto subnudo apice paniculatim ramoso, pedunculis pedicellis squamisque involucri linearibus pilis atris rigidis patentibus subsetosis.

HAB. Patagonia; Cape Fairweather, *Capt. King.*

Planta pedalis. *Folia* pauca, 6-uncialia. *Panicula* 6–8-flora. *Involucra* ½ unc. longa.—*H. gracili*, Hook., Americæ borealis, affinis.

XXVI. STYLIDIEÆ, *Juss.*

1. FORSTERA, *L.*

1. Forstera *muscifolia*, Willd., *Sp. Pl.* vol. iv. p. 148. *DC. Prodr.* vol. vii. p. 333. F. uliginosa, *Homb. et Jacq. in Voy. au Pole Sud, Bot. Phan. Dicot.* t. 16 D. Phyllachne uliginosa, *Forster, Comm. Goett.* vol. ix. p. 24. *Swartz in Schrad. Journ.* vol. ii. p. 173. t. 1, *et in Koenig and Sims Annals of Bot.* vol. i. p. 286. t. 5. *Lamarck Illust. Gen.* t. 741. *Journ. Hist. Nat.* p. 190. t. 10. f. 2. Stibas, *Commerson, MSS.*

Hab. Strait of Magalhaens, *Commerson, MM. Hombron et Jacquinot*; Fuegia, Good Success Bay, *Banks and Solander, Forster, C. Darwin, Esq.*; Port Famine, *Capt. King*; Hermite Island, Cape Horn, *J. D. H.*

For remarks upon this species, see Part 1. p. 39 of the present work. Like the *Donatia*, a plant which, from the nature of the soil, climate, and vegetation of the Falklands, might be expected to have been met with there, accompanying the *Caltha appendiculata* and *Astelia pumila*.

XXVII. LOBELIACEÆ, *Juss.*

1. PRATIA, *Gaud.*

1. Pratia *repens*, Gaud. vid. ante Part 1. p. 42. in note.

Hab. Fuegia, Staten Land, *Dr. Eights*; Falkland Islands, *Gaudichaud, D'Urville*, and all succeeding voyagers.

Since the publication of the synopsis of this genus, in the first part of the present work, I have examined a new species from the Straits of Magalhaens, also inhabiting the eastern side of the Andes of Chili, specimens of which, from the latter locality, were then considered to be the true *P. repens*, which, so far as I am aware, is a native of the Falkland Islands, Staten Land, and Valparaiso only.

2. Pratia *longiflora*, Hook. fil.; glaberrima, caule breviusculo repente subsimplici, foliis paucis erectis carnosis longe petiolatis ovatis obtusis integerrimis v. obscure sinuatis, pedunculis fere terminalibus folio æquilongis ebracteatis, calycis segmentis ovatis acutis, corollæ tubo cylindraceo elongato lobis patentibus triplo longiore.

Hab. Strait of Magalhaens; Cape Negro, *C. Darwin, Esq.*

Herba laxe cæspitosa. *Caulis* diametro pennæ passerinæ, 1 unc. longus, repens, nodosus, apice ascendente. *Petioli* basi vaginantes, ½–1 unc. longi, crassiusculi, erecti. *Folia* magnitudine varia, ¼–¾ uncialia, subcoriacea, enervia. *Pedunculi* ex axillis supremis orti, validi, infra florem gradatim incrassati. *Ovarium* late oblongum, gibbosum. *Calycis dentes* erecti sub ½ lin. longi.

Very nearly allied to the former, but differing in the short stems and much smaller and narrower foliage, and most materially in the narrow cylindrical tube of the corolla, which is far longer than the segments, and nearly four times as long as broad. Mr. Bridges has gathered specimens in the marshes of El Valle de las Cuevas, on the eastern side of the Andes of Chili.

XXVIII. GESNERIACEÆ, *Nees.*

1. MITRARIA, *Cav.*

1. Mitraria coccinea, Cavanilles, *Icones*, vol. vi. p. 67. t. 579. *DC. Prodr.* vol. vii. p. 537.

Hab. Chonos Archipelago, *C. Darwin, Esq.*

XXIX. ERICEÆ, *Br.*

1. PERNETTYA, *Gaud.*

1. Pernettya *mucronata*, Gaud. *in Ann. Sc. Nat.* vol. v. p. 102. *in note. DC. Prodr.* vol. vii. p. 587. *Hombr. et Jacq. in Voy. au Pole Sud, Bot. Phan. Dicot.* t. 22. X. Y. Z. Arbutus mucronata, *Linn. fil. Suppl.* 239. *Forst. Comm. Goett.* vol. ix. p. 31. *Lamarck, Illust.* t. 366. f. 7. *Graham, in Bot. Mag.* t. 3093. *Lindley, Bot. Reg.* t. 1675. *Lodd. Bot. Cab.* t. 1848. A. rigida, *Banks et Sol. MSS. in Bibl. Banks. cum icone.*

Hab. Strait of Magalhaens, *Commerson*; Fuegia, *Banks and Solander*, and found by all succeeding voyagers, throughout that country.

One of the most abundant of Fuegian plants, exceedingly variable in the size of its foliage. Owing, apparently, to the puncture of an insect, the apices of the ramuli in the present and following species frequently assume the form of cones, being covered with densely imbricated leaves so metamorphosed as exactly to resemble the scales of an *Abies*.

Though Proteau in its foliage, this species is very confined in its geographical limits, advancing no further north than Cape Fairweather, on the east coast of Patagonia.

2. Pernettya *pumila*, Hook.; humilis, glaberrima, subcæspitosa, ramosa, caulibus prostratis vel suberectis, foliis imbricatis sessilibus ovatis acutis obtusisve concavis subter carinatis marginibus subtilissime cartilagineo-serrulatis, pedicellis axillaribus arcuatis folio æquilongis longioribusve 1-floris basi bracteolatis.

Var. α, *minor*, foliis densius imbricatis obtusis. P. pumila, *Hook. Ic. Plant.* t. 9. *DC. Prodr.* vol. vii. p. 586. *Homb. et Jacq. in Voy. au Pole Sud, Bot. Dicot.* t. 22. S *et* T. Arbutus pumila, *Linn. fil. Suppl.* n. 239. *Forst. Comm. Goett.* vol. ix. p. 32. Andromeda humilis, *Banks et Sol. MSS. in Bibl. Banks. cum icone.*

Var. β, *empetrifolia*, foliis laxe imbricatis angustioribus subacutis obtusisve. P. empetrifolia, *Gaud. in Ann. Sc. Nat.* vol. v. p. 102. *Freyc. Voy. Bot.* p. 454. t. 67. *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 607. *DC. Prodr.* vol. vii. p. 586. Andromeda empetrifolia, *Lamk. Encycl.* vol. i. p. 155. Arbutus empetrifolia, *Linn. fil. Suppl.* v. 239. Bruyère à feuilles pointues," *Pernetty, Voy.* t. 2. p. 64.

Hab. Var. α. From Cape Tres Montes (Patch Cove, alt. 2,000 feet), on the west coast of South Chili to Cape Horn, and in the Falkland Islands, *Commerson, Banks and Solander, Forster*, and all succeeding voyagers. Var. β. South part of Tierra del Fuego, *Forster, C. Darwin, Esq., J. D. H.* Falkland Islands, most abundant.

The two plants here united under one specific name are decidedly mere varieties. The β. *empetrifolia* is by far the most abundant, and its prostrate stems sometimes attain the length of two feet. Var. *minor*, in its smallest

Finch del. et lith.

Gaultheria Antarctica. Hook fil.
microphylla

Reeve imp.

state, appears, at first sight, sufficiently distinct; but it often runs out to a considerable length, when the leaves become much more laxly imbricated.

Both pink and white berries are found on this species; also cones, similar to those described under *P. mucronata*, and diseased ramuli, densely covered with minute, erect, linear leaves.

Dr. Gillies' *Arbutus vaccinioides*, from the Andes of Chili, which appears identical with Poeppig's *A. leucocarpa* (*Pernettya*, DC.), is most likely another form of this plant, the length of the pedicels affording no character either in the flower or fruit.

2. GAULTHERIA, *Kalm.*

1. GAULTHERIA *microphylla*, Hook.fil.; pumila, ramosa, ramis gracilibus setosis, foliis late ovatis v. oblongis obtusis marginibus incrassatis obscure serratis, pedicellis axillaribus brevibus fasciculatis unifloris recurvis, fructibus globosis vel turbinatis. Pernettya serpyllifolia, *DC. Prodr.* vol. vii. p. 587. Arbutus serpyllifolia, *Lam. Encycl.* vol. i. p. 228. A. microphylla, *Forst. Comm. Goett.* vol. ix. p. 32. (TAB. CXII. *sub nom.* G. Antarcticæ).

HAB. Strait of Magalhaens, *Commerson*; Port Famine, *Capt. King*. Good Success Bay, *Banks and Solander*; Staten Land, *Webster*; Hermite Island and East Falkland Island. *J. D. H.*

Suffruticulus 3–4-uncialis, vage ramosus, ramis gracilibus subfiliformibus rufo-brunnois parce setosis. *Folia* sparsa, brevissime petiolata, coriacea, glaberrima, 2–3 lin. longa, læte viridia, nitida. *Flores* parvi; corolla globosa, alba. *Bacca* pallide rosea, foliis æquilonga.

When figuring this species, I gave it the trivial appellation of *Antarctica*, not being aware of its identity with *Pernettya serpyllifolia*, DC., and *Arbutus serpyllifolia*, Lam., all which names must yield to that of *G. microphylla*, the plant being undoubtedly the little-known *Arbutus microphylla* of Forster.

The genera *Gaultheria* and *Pernettya* are the representatives, in the high southern latitudes, of the *Arbuti*, of the family of *Ericeæ* in the northern and Arctic regions.

PLATE CXVI. *Fig.* 1, apex of flowering branch; *fig.* 2, flower; *fig.* 3, the same laid open; *fig.* 4, germen, hypogynous glands and stamen; *fig.* 5, stamen; *fig.* 6, longitudinal section of germen; *fig.* 7, transverse section of the same; *fig.* 8, ripe fruit; *fig.* 9, longitudinal section of the same; *fig.* 10, seed; *fig.* 11, longitudinal section of the same; *fig.* 12, seed with outer testa removed; *fig.* 13, longitudinal section of the same; *fig.* 14, embryo:—all *magnified*.

XXX. EPACRIDEÆ, *Br.*

1. LEBETANTHUS, *Endl.*

1. LEBETANTHUS *Americanus*, Endl. *MSS. in Enchirid. Bot.* Allodape Americana, *Endl. Gen. Plant.* p. 749. *Walpers Repert. Bot. Syst.* vol. ii. p. 733. Prionotes Americana, *Hook. Ic. Plant.* t. 30. *DC. Prodr.* vol. vii. p. 766. Azalea bullata, *Forst. MSS. in Mus. Banks. cum icone.* Jacquinotia prostrata, *Homb. et Jacq. Voy. au Pole Sud, Bot. Dicot.* t. 22. B.

HAB. Strait of Magalhaens, Port Famine, *Capt. King*; and thence south throughout the wooded portion of Fuegia and Staten Land, *Forster, C. Darwin, Esq., Mr. Webster, &c.*

It is certainly very remarkable that the sole American representative hitherto noticed of the order *Epacrideæ*, is also among the very few that so deviate from one of the most important diagnostic characters of that order, as to present a distinctly two-celled anther. Labillardière rightly described the stamens of the Tasmanian *Prionotes*

cerinthoides, Br., as having this structure, and it is a singular circumstance that these two plants, which, through their bilocular anthers and hypogynous filaments, completely unite the *Ericeæ* of the northern hemisphere with their southern representatives in Australia, the *Epacrideæ*, are both natives of very humid climates and densely wooded regions, and not of such localities as the majority of either Order (but especially the *Epacrideæ*) affect.

The subscandent habit of *L. Americanus* is very peculiar; it grows on the trunks of trees, and often creeps up them for some feet. This is also the case with some other distichous-leaved Antarctic plants, as *Callixene*, and *Luzuriaga*, and with the *Prionotes* and *Decaspora* of Tasmania.

XXXI. GENTIANEÆ, *Juss.*

1. GENTIANA, *L.*

1. Gentiana *Magellanica*, Gaud. *in Ann. Sc. Nat.* vol. v. p. 89, *et in Freyc. Voy. Bot.* p. 134. *D'Urville, in Mém. Soc. Linn. Paris*, vol. iv. p. 607. *Griseb. Gen. et Sp. Gent.* p. 237, *et in DC. Prodr.* vol. ix. p. 99.

Hab. Strait of Magalhaens; Port Famine, *Capt. King*; south part of Fuegia, *C. Darwin, Esq.* Falkland Islands, *Gaudichaud, D'Urville, Mr. Wright, J. D. H.*

2. Gentiana *Patagonica*, Grisebach, *Gen. et Sp. Gent.* p. 237, *et in DC. Prodr.* vol. ix. p. 99. (Tab. CXV. sub. nomine *G. Magellanicæ*).

Var. β, *Darwinii*, Griseb. *l. c.*

Hab. Strait of Magalhaens; Elizabeth Island, *C. Darwin, Esq.*

I can hardly consider Mr. Darwin's specimens to be even a variety of the plant collected by Capt. King at Cape Fairweather (not Port Jamaica, vid. Griseb.), on the coast of Patagonia.

Except the rather broader and more obtuse segments of the less deeply divided calyx, there is nothing to distinguish this from the Tasmanian and New Zealand *G. montana*, Forst.

Plate CXV. (under the name of *G. Magellanica*). *Fig.* 1, flower; *fig.* 2, stamen; *fig.* 3, germen; *fig.* 4, ripe fruit; *fig.* 5, seed; *fig.* 6, the same with the testa removed:—all *magnified*.

3. Gentiana *prostrata*, Hænk. *in Jacq. Coll.* vol. ii. p. 66. t. 17. f. 2. *Griseb. Gen. et Sp. Gent.* p. 271, *et in DC. Prodr.* vol. ix. p. 106.

Hab. Strait of Magalhaens; Cape Negro, *C. Darwin, Esq.*

For the widely extended geographical distribution of this little species, see Part 1. p. 56. of the present work.

XXXII. CONVOLVULACEÆ, *Juss.*

1. CALYSTEGIA, *Br.*

1. Calystegia *sepium*, Br., *Prodr.* p. 483. *Engl. Bot.* t. 313. *Choisy in DC. Prodr.* vol. ix. p. 433.

Hab. Chonos Archipelago, *C. Darwin, Esq.*

This plant, the common English Bind-weed, is universally diffused throughout the temperate regions, both of the northern and southern hemispheres. In the latter it inhabits New Holland, New Zealand, and the Island of Java, according to M. Choisy, in DC. Prodr. l. c.

Fitch del. et lith.

Reeve imp

Gentiana Magellanica: Gaud.

XXXIII. BORAGINEÆ, *Juss.*

1. MYOSOTIS, *L.*

1. Myosotis *albiflora*, Banks et Sol. MSS.; caulibus e rhizomate valido plurimis prostratis gracilibus foliisque parce appresse pilosis, foliis radicalibus spathulatis petiolatis caulinis obovato-oblongis, floribus paucis axillaribus breviter pedicellatis calycibusque campanulatis appresse pilosis, corollæ tubo calycem superante limbi lobis late oblongis breviusculis. M. albiflora, *Banks et Sol. MSS. in Bibl. Banks. cum icone.*

Hab. Fuegia, Good Success Bay, *Banks and Solander.* South part of Tierra del Fuego, *C. Darwin, Esq.*

Rhizoma crassum, ¼ unc. longum, fibras plurimas atras emittens, apiceque caules 5–8 gerens. *Caules* 2-unciales, prostrati, apice ascendentes, parce foliosi. *Folia* ½–¾-uncialia, 3–4 lin. lata, apice obtusa, utrinque sed super præcipue pilis albidis appressis sparsa. *Flores* axillares, non racemosi, inconspicui, pedicellati; pedicello calyce æquilongo, sub ½ lin. longo. *Calyx* 5-fidus, laciniis ovato-lanceolatis, acutis, corollæ tubo ½ brevioribus. *Corollæ* tubus teres, fauce glandulis fornicatis superne medio emarginatis fere clausa. *Stamina* inclusa. *Stylus* stigmate clavato terminatus.

In size and habit this little species closely resembles the *M. Antarctica* (Part 1. p. 57. t. 38), but it is a much slenderer, less rigid, and comparatively glabrous plant, with larger, though still very inconspicuous, and white flowers. It evidently belongs, by its prostrate stems and axillary flowers, to the New Zealand group of the genus, which, under the species alluded to, I have noticed as very different from that including the majority of the genus.

XXXIV. SOLANEÆ. *Juss.*

1. SOLANUM, *L.*

1. Solanum *tuberosum*, Linn. *Sp. Pl.* 282. *Dunal, Monogr.* p. 135.

Hab. Chônos Archipelago, *C. Darwin, Esq.*

The true Potato plant reaches the boundary to which the Antarctic Flora of South America is confined, and is described as particularly abundant in the localities whence Mr. Darwin's specimens were brought. The nature of the present work forbids my dwelling on some of the peculiarities which mark the history and habitat of this plant; and I leave the subject with the less reluctance, because Mr. Darwin's own history of its discovery in an indisputably native state is already published in one of the most interesting 'Journals of a Naturalist' that has ever been written. The following remarks apply wholly to the botanical affinities of the individual species now universally cultivated in all temperate civilized countries.

There are in South America several *Solana*, so closely allied to the true Potato, that it is exceedingly difficult to distinguish them specifically. Though differing materially in the shape of their calycine lobes, they display such variation in these organs, that no specific value can be attached to them alone. The fruit may afford better characters, but that of many is at present unknown. The following is an enumeration of those South American *Solana*, allied to, or varieties of, the true *S. tuberosum*, which exist in the Hookerian Herbarium. I shall commence with the specimens most similar to the common cultivated form.

Series I. *S. tuberosum*, L.

Var. 1, *vulgare*, planta pubescens, caule robusto, foliis amplis, calycis majusculi lobis e basi late ovata in acumen subelongatum productis.

Hab. Chonos Archipelago, *C. Darwin, Esq.* Specimens very luxuriant, altogether resembling well-grown cultivated plants. Hills about Lima, *J. Mac Lean, Esq.*; several sub-varieties, marked as "yellow, mottled, white, or purple Potato"; but none are so luxuriant as Mr. Darwin's specimens. Juan Fernandez, *Bertero*; no flower;—Mr. Bertero remarks that it is possibly wild, the roots being bitter.

Var. 2, *macranthum*, foliolis multi-4–8-jugis ovato-lanceolatis glabratis, corymbis glabriusculis, laciniis calycinis subulatis, corollis amplis 1½ unc. diametro.

Hab. Serras of Amancaes, Peru, *Mathews*, n. 847.

Var. 3, *puberulum*, foliolo terminali maximo, lateralibus parvis multotics minoribus, corymbis glabratis, calycibus minoribus glabriusculis, corollis amplis.

Hab. Puruchuca, Peru; *Mathews*, n. 772.

Var. 4, *multijugum*, totum ut in precedente, sed glabratum, foliolis æqualibus, lateralibus multijugis lanceolatis basi cordatis petiolulatis.

Hab. cum priore, *Mathews*, n. 771.

Var. 5, *polemoniifolium*, foliis incano-pubescentibus, foliolis plurimis parvis, calycis paulo minoris glabrati lobis brevioribus acutis.

Hab. Andes of Chili and Mendoza, *Dr. Gillies*.

This and the four preceding are all large-flowered states probably of the true *Solanum tuberosum*, upon the pubescence, or form and number of the leaflets of which no reliance is to be placed. If so, its range is from an elevation near Lima in Peru, to the level of the sea at Chonos Archipelago, and inland to the Andes of Mendoza in Chili.

Stirps II. *S. Commersonii*, Poir.

Var. 1, *glabriusculum*, foliolo terminali lateralibus paucijugis majore, floribus majusculis, calycibus pubescentibus.

Hab. Buenos Ayres, *Tweedie*; Valparaiso, *Bridges*, n. 401.

Apparently the plant figured in Hort. Soc. Trans. vol. v., p. 249. t. 9, 10, 11, from Commerson's own specimens.

Var. 2, *pilosiusculum*, foliis applis, foliolis multijugis æqualibus, floribus majusculis, calycibus pubescentibus.

Hab. Mountains of Mendoza, *Dr. Gillies*; "cult. ad Buenos Ayres sub nom. *S. tuberosi*," *Herb. Hook.*

Hardly different from the former variety. Apparently the *S. tuberosum* of Hort. Soc. Trans., the experiments upon which are there detailed.

Var. 3, *glanduloso-pubescens*, foliolis parvis ovatis basi cordatis petiolulatis.

Hab. Foot of the mountains of Mendoza, *Dr. Gillies*.

A smaller plant than either of the foregoing.

Var. 4, *glabratum*, foliolis paucijugis terminali majore, corymbo paucifloro, floribus minoribus:—an sp. distincta?

Buenos Ayres, in hedges, *Dr. Gillies*.

I think there can hardly be a doubt that the largest-flowered plant, whose varieties I have included under the Stirps I., is the true cultivated Potato, a species, in its wild state, confined to the west of the Andes. Whether the *S. Commersonii*, which chiefly differs in the size of the flowers, be really distinct or not, is another question. Ranging as as it does from one side of the continent to the other, it may perhaps have some claims to be considered the type of the Potato, of which the large-flowered variety, now commonly cultivated with us, is confined, as just observed, to the Pacific side of South America.

That both produce tubers, called "Papas" and "Maglia," is evident, for the specimen from which the tubers were reared to the size of ordinary Potatos, in the Horticultural Society's Gardens, is certainly referable to the small-flowered Valparaiso plant, also collected by Bridges; and the large-flowered species of Lima presents the ordinary varieties of the well-known vegetable, as does the Chonos Archipelago and Mendoza one.

To show how little evidence is to be derived from the mere fact of the species producing tuberous roots, I may mention that there is a third plant, allied to both the former, and found over a great part of extra-tropical South America, bearing tubers, altogether similar to those of the two foregoing *Solana*. This I refrain from naming, though unable to ascertain that it is previously described, but it may readily be recognized by its great general resemblance to *S. Commersonii*, from which it differs in the small fruit, and in the short cupuliform or hemispherical calyx, whose lobes are short, broad, and rounded; while in other respects, as regards pubescence and size and form of the leaflets, it is as variable as the two former. I have seen specimens from Antuco (*Reynolds*), Valdivia (*Bridges*, 719), Valparaiso (*Cuming*, 555), and Uruguay (*Tweedie*), to the last of which the collector has added on the ticket, "This bears a considerable quantity of nasty soft watery Potatos at its root, called Papas Amargas, in consequence of their bitter taste."

With regard to Mr. Darwin's specimens, in producing an abundance of tubers they only follow the habit of *Cardamine hirsuta* and many other plants, when inhabiting such a soil as a shingly beach. In the absence of a bitter principle, evident in the wild tubers of the "Maglia" of the drier parts of South America, the Chonos Archipelago Potato may be compared with the Celery mentioned at p. 287, whose insipidity I attribute partly to the dampness of the climate, and still more to the absence of the direct rays of the sun.

Professor Henslow, who has investigated the subject of the native Potato with his usual care and skill, agrees with me in considering this of Mr. Darwin's to be quite identical with the common cultivated Potato; and he further remarks the differences between it and the "Maglia" of Chili, without, however, pronouncing them specifically distinct.

Thus, from the information I have been able to obtain, it appears very possible that the plant experimented upon in the Horticultural Society's Gardens, is even specifically distinct from the common cultivated Potato, for it is certainly the small-flowered "Maglia" of Chili, and not the large-blossomed "Aquenas" of Chiloe and the Chonos Archipelago. It would be very interesting to introduce the tubers of Mr. Darwin's *S. tuberosum*, and the *S. Commersonii* (the latter both from the east and west coasts), into our gardens; along with, if possible, the short-calyxed species, which is also stated by Mr. Tweedie to produce tubers.

Though I have spoken of these three *Solana* as all tuberous-rooted, it is more than probable that they are not always or necessarily so, and that the absence of those hybernacula does not indicate specific distinction. Mr. Cruikshanks, who has studied one of the above species in its cultivated state in Chili (probably the *S. Commersonii*), says of it, that the "Papas Amarillas," or Yellow Potato of Peru, which was grown in the Horticultural Society's Gardens, is a variety of the *Solanum tuberosum*, differing from all other known varieties of that species in its partiality for a particular climate. Mr. Cruikshanks also remarks, "that it will not produce bulbs near the coast in Peru, nor at Valparaiso, but only on the higher parts and in a very few spots; but that further south in Chili, as near Valdivia, it is very productive." The explanation seems to be, that this yellow Potato, whether a species or variety, is dependent upon a moist and cool climate for the formation of tubers, or, as the inhabitants of Peru express

it, on the "*tiemperamento de la Sierra*". Hence, too, may arise their absence on Dr. Lindley's *S. etuberosum*, which is intermediate between two of Mr. Mathews' Peruvian states of *S. tuberosum*, having the foliage and colour of the flowers of his No. 847, which I have made the second variety of *S. tuberosum*, and the smooth panicle and small calyx of Mathews' No. 771, or my fourth variety of the same species.

Genus SOLANEIS relatum.

1. Desfontainea *spinosa*, Ruiz et Pavon, *Fl. Per.* vol. ii. p. 47. t. 186. *Don, in Ed. Journ. of Sc.* 1831. p. 275. *Hook. Ic. Plant.* t. 33. D. splendens, *H. B. K. Plant. Æquinoct.* vol. i. p. 157. t. 45.

Hab. Staten Land; *Mr. Webster.*

Much has been written regarding the affinities of this curious genus; for several reasons, I retain it near *Solaneæ*, to which Order it was doubtfully referred by the authors of the "Plantes Æquinoctiales," and more recently by M. Endlicher. M. Kunth afterwards suggested its relationship with *Theophrasteæ*, which Mr. Don had also suspected. The last-mentioned author has more recently arranged it in *Gentianeæ*, and is followed by Dr. Lindley, in 'The Vegetable Kingdom', who had previously placed it in *Aquifoliaceæ* (*Nat. Syst. of Bot.*). My own impression is that its proper place is nearer to the order *Ericeæ*, an hypothesis strengthened by the observations of my friend M. Planchon, who has studied this plant most attentively, and who pointed out its affinity with the anomalous genus *Galax*, and particularly with the Arctic European and American *Diapensia Lapponica*, in the position of the anther and some other points.

Capt. King's collection contains a very curious plant from Port Famine, which, from the nature of the fruit and testa of the unripe seeds, I presume, approaches *Ericeæ*, though wholly differing in habit and in some other points which ally it to *Diapensia*. Unfortunately all the specimens are out of flower, which I exceedingly regret, for it may afford characters which will throw a light upon these and other obscure genera of *Monopetalæ*. Its seeds are enclosed in a double testa, a structure which occurs, though rarely, in several orders of monopetalous Dicotyledons.

The geographical distribution of this curious genus is, like that of *Gunnera*, very extended, from the Andes under the equator, alt. 12,000 feet, to the level of the sea at Staten Island, in lat. 53° south.

XXXV. SCROPHULARINEÆ, *Juss.*

1. CALCEOLARIA, *L.*

1. Calceolaria *Fothergillii*, Sol. *in Ait. Hort. Kew.* vol. i. p. 30. t. 1. *Cav. Ic.* vol. v. t. 442. f. 1. *Bot. Mag.* t. 348. *Benth. in DC. Prodr.* vol. x. p. 208. C. Necana, *Spreng. Syst. Veget.* vol. i. p. 44. (Tab. CXVII., *left-hand figure*).

Hab. Strait of Magalhaens; Port Famine, *Capt. King.* Falkland Islands, very abundant.

Though very inferior in stature and beauty to most of its congeners, this is among the prettiest of the wild flowers of the Falkland Islands, and the attention of the voyager who is familiar with the genus *Calceolaria* only in the conservatories of Britain, must be attracted by its appearance on the exposed shores of these inhospitable Islands. I have already mentioned several decidedly English plants, which are natives of this portion of the opposite hemisphere; interesting in themselves, they become still more so when contrasted with such foreign-looking associates as the present, or the nodding bells of the *Sisyrinchium*, which sometimes whiten the plains, or the deep-orange blossoms of the Falkland Island violet, invariably seen growing with this *Calceolaria*.

Plate CXVII., left hand figure. *Fig.* 1, ripe capsules; *fig.* 2, transverse section of the same; *fig.* 3, seed; *fig.* 4, longitudinal section of the same:—all *magnified*.

2. Calceolaria *nana*, Sm.; herbacea, glabra v. tenuissime viscoso-tomentella, caule brevissimo, foliis

Fitch del et lith.

Reeve imp.

Calceolaria Fothergilhi Ait.

C. Darwinii Benth.

petiolatis ovatis obtusis basi longe angustatis integerrimis crenulatisve, pedunculis scapiformibus uniforis, calycis minute viscoso-tomentelli laciniis late ovatis obtusis, corollæ labio superiore calyce parum breviore inferiore dependente obovato basi longe contracto ultra medium aperto. *Benth. in DC. Prodr.* vol. x. p. 208. *Smith, Icon. ined.* vol. i. p. 1. t. 1. C. uniflora, *Lam. Illust. Gen.* t. 15. f. 3.

HAB. Strait of Magalhaens, *Commerson.* Port Gregory, *Capt. King.*

Caules ½-1-pollicares, apice pedicellos 1–2-subtripollicares ferunt. *Staminum* filamenta quam in affinibus longiora. *Benth. l. c.*

The foliage alone is insufficient to distinguish this species from a small state of *C. Fothergillii*, but they are very dissimilar in the calyx and size of the corolla, the sepals of the former being very broad and almost cucullate, covered externally with a viscid yellow tomentum, while in *C. nana*, they are smaller, narrower, and simply pubescent. The corolla of *C. nana* almost equals that of *C. Darwinii*, to which, in every respect, it is nearly allied.

This species has been also found at Cape Fairweather by Capt. King.

3. CALCEOLARIA *Darwinii*, Benth.; glabra, caule brevi, foliis late oblongis integerrimis vel remote paucidentatis in petiolum longe angustatis, pedunculis scapiformibus 1–3-floris, calycis minute puberuli laciniis late ovatis obtusis, corollæ labio superiore calycem subæquante inferiore dependente maximo late obovato basi longe contracto ultra medium aperto, antherarum loculis ovatis. *Bentham, in DC. Prodr.* vol. x. p. 207. (TAB. CXVII., *right-hand figure*).

HAB. Strait of Magalhaens; Elizabeth Island, *C. Darwin, Esq.*

Habitus *C. polyrhizæ*, corollæ ils *C. Fothergillii* forma similes sed majores, speciosæ, maculatæ. *Benth. l. c.*

Much the handsomest species of the small section "*Scaposæ*," to which all the Antarctic *Calceolariæ* belong. Though very distinct at first sight from the former, the individual parts are so liable to vary that it becomes almost impossible to draw up an absolute distinctive character. For instance, the leaves in one specimen have the same form as in a Cape Fairweather individual of *C. nana*, and, though more glabrous than in most states of the latter plant, they are not universally so; the corollæ are quite alike in the two, and the difference in the length of the filaments is hardly appreciable. The calyx of *C. Darwinii* varies exceedingly in the size and form of its segments, they are sometimes large, broad, and obtuse, as in *C. Fothergillii*, or small and narrow like those of *C. nana.*

PLATE CXVII., right hand figure. *C. Darwinii*, the *natural size.*

4. CALCEOLARIA *polyrhiza*, Cav. *Ic. Rar.* vol. v. p. 25. t. 441. *Benth. in DC. Prodr.* vol. x. p. 207.

HAB. Falkland Islands; *Ned.*

Of this plant I have seen no Falkland Island specimens. It is also a native of Port Desire on the coast of Patagonia, where Mr. Darwin gathered it.

5. CALCEOLARIA *plantaginea*, Smith, *Icon. ined.* vol. i. p. 2. t. 2. *Hook. in Bot. Mag.* t. 2805. *Lodd. Bot. Cat.* t. 1402. *Benth. in DC. Prodr.* vol. x. p. 208. C. biflora, *Lam. Encycl.* vol. i. p. 556. Bæa plantaginea, *Persoon, Synops.* vol. i. p. 15.

HAB. Strait of Magalhaens, *Commerson*; Elizabeth Island, *C. Darwin, Esq.*

Very abundant between the latitude of Valparaiso and the Strait of Magalhaens, though confined to a narrow belt, which runs obliquely across the continent of South America, from lat. 38°, to lat. 53°. In the northern half of its range, between the parallels of Valparaiso and Chiloe, it is chiefly confined to the west of the Andes; in the southern half, between the latter locality and the Strait of Magalhaens, it crosses to the east side of South America; thus avoiding equally the wet, cold, and stormy latitudes of South-west Chili and Fuegia, and the arid plains of Patagonia.

2. LIMOSELLA, *Linn.*

1. Limosella *aquatica*, Linn. *Sp. Pl.* p. 881. *Engl. Bot.* t. 357. *Benth. in DC. Prodr.* vol. x. p. 427.

Var. *β, tenuifolia.* L. tenuifolia, *Nutt. Gen. N. Am.* vol. ii. p. 43. *Gaudichaud, in Ann. Sc. Nat.* vol. v. p. 102, *et in Freyc. Voy. Bot.* p. 133. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 607. *Benth. in DC. Prodr.* vol. x. p. 427. L. australis, *Brown, Prodr.* p. 443.

Hab. Falkland Islands, *Gaudichaud, J. D. H.* Kerguelen's Land, *J. D. H.*

I am convinced there is no specific distinction between the *Limosella aquatica*, L., and *L. tenuifolia*, Nutt., and have consequently united them. In the specimens from the southern hemisphere which I have examined, the leaves do not attain the breadth which those of the northern temperate regions generally present; though, on the other hand, both European, Asiatic, and North American plants of the *L. aquatica* have the foliage narrow as that of *L. tenuifolia*, to which variety some Arctic individuals of *L. aquatica* are quite similar.

The range of this species is nearly identical with that of *Callitriche aquatica* and *Montia fontana*, and there is also a considerable resemblance in the mode and extent of their variation between these three plants. This is not remarkable with regard to *Callitriche* and *Montia*, which are very frequently seen associated together, invariably so in Kerguelen's Land, in the Falkland Islands, in Lord Auckland's Group and Campbell's Island, and thus are influenced in common by every fluctuation of climate and temperature, and by the depth or rapidity of the current, when growing in the water; but the *Limosella* does not occur mixed with these two genera, even though inhabiting the same islands.

In Kerguelen's Land the *Limosella* is found in the muddy bottom of a lake, and probably flowers all the year round. I gathered it in the month of July (mid-winter), beneath two feet of water, covered with two inches of ice; even then it had fully-formed flowers, whose closely imbricating petals retained a bubble of air, the anthers were full of pollen and the ovules apparently impregnated. The climate of Kerguelen's Land being such, that this lake is perhaps never dried, it follows that the plant has here the power of impregnation when cut off from a free communication with the atmosphere, and supplied with a very small portion of atmospheric air generated by itself. My Falkland Island specimens are in a very poor state. Gaudichaud, who first detected it in that Island, considers it identical with the European plant.

3. VERONICA, *L.*

1. Veronica *elliptica*, Forst.; *Fl. Ant.* part 1. p. 58. V. decussata, *Ait. et auctor.*

Hab. Strait of Magalhaens to Cape Horn in Fuegia, *Commerson, Banks and Solander*, and all succeeding voyagers. West Falkland Island, chiefly on the southern and western coasts.

2. Veronica *serpyllifolia*, Linn. *Sp. Pl.* p. 15. *Engl. Bot.* t. 1075. *Gaud. in Ann. Sc. Nat.* vol. v. p. 102, *et in Freyc. Voy. Bot.* p. 133. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 607.

Hab. Falkland Islands, abundant near the colonized parts of the Islands; *D'Urville, &c.*

This species, in affecting principally the vicinity of the settlements and ground much frequented by cattle, was probably introduced originally from Europe into the Falkland Islands. It is found no where else in the southern hemisphere, except the neighbourhood of Quito, where Mr. Kunth doubts its being indigenous, or in equally equivocal situations.

4. OURISIA, *Comm.*

1. Ourisia *Magellanica*, Juss.; caule repente, foliis subradicalibus longe petiolatis cordato-ovatis

Fitch, del et lith.

Reeve, Imp.

Ourisia Antarctica. Hook fil.

orbiculatisve obtusis crenatis floralibus orbiculatis semiamplexicaulibus, pedunculis dissitis, calycis laciniis ovatis obtusiusculis ciliatis subbilabiatim connatis. *Benth. in DC. Prodr.* vol. x. p. 492. *Gærtner, fil. de Fruct.* vol. iii. p. 44, *non Poepp. et Endl.* Chelone ruelloides, *Linn. fil. Suppl.* p. 271.

HAB. Strait of Magalhaens, *Commerson*; Good Success Bay, *Banks and Solander*; Staten Land, *Mr. Webster*.

Caules breves, crassiusculi uti petioli nervi foliorum et calycis margo pilis nonnullis patentibus ciliati; planta cæterum glabra. *Petioli* 3-4 poll. longi. *Folia* crassiuscula, majora 2–2½ pollicaria, cremis inæqualibus; floralia semi-pollicem lata. *Racemus* fere a basi scapi florifer. *Pedicelli* fructiferi ultra pollicares. *Calycis* laciniæ 2–2½ lin. latæ. *Corolla* 7–8 lin. longa, tubo amplo incurvo, limbi laciniis retusis. *Capsula* late orbiculata, compressiuscula. *Benth. l. c.*

This, of which I have seen but a single specimen, must be one of the handsomest Fuegian plants; it is apparently very scarce, for it does not exist in the collections of Capt. King or Mr. Darwin, nor have I myself gathered it.

2. OURISIA *breviflora*, Benth.; humilis, pilosa, caule ascendente foliato 2–4-floro, foliis petiolatis ovato-orbicularibus basi truncato-subcordatis floralibus sessilibus ovatis, calycis segmentis lineari-oblongis tubo corollæ longioribus. *Benth. in DC. Prodr.* vol. x. p. 493. (TAB. CXVIII. sub nomine *O. Antarcticæ*).

HAB. Strait of Magalhaens, Port Famine, *Capt. King*; South part of Tierra del Fuego, *C. Darwin, Esq.* Hermite Island, in clefts of rocks on the mountains, *J. D. H.*

Caules basi ramosi, 2–3-pollicares. *Folia* vix semi-pollicaria. *Calycis* segmenta fere 3 lin. longa, angusta, obtusa. *Corollæ* limbus valde obliquus, laciniis emarginatis, infima quam tubus paulo longior.

A pretty little species, probably not rare in Fuegia, though readily overlooked from its very diminutive size. When the accompanying plate was prepared and the name *O. Antarctica* applied to it, I was not aware of Mr. Bentham having named the plant in the then unpublished volume of De Candolle's Prodromus.

The genus *Ourisia* is highly interesting, from being among those peculiar to the Antarctic or higher latitudes of the southern regions, which have no analogue in the northern, but which, though most abundant in Antarctic America, have representative species in the temperate portions of Terra Australis (*O. integrifolia*, Sm.), and in New Zealand or temperate Polynesia (*O. macrophylla*, Hook.).

PLATE CXVIII. (under the name of *O. Antarctica*). *Fig.* 1, flower; *fig.* 2, corolla laid open; *fig.* 3, ovarium; *fig.* 4, transverse section of the same; *fig.* 5, ripe fruit; *fig.* 6, transverse section of the same; *fig.* 7, seed; *fig.* 8, longitudinal section of the same:—all *magnified*.

5. EUPHRASIA, *L.*

EUPHRASIA *Antarctica*, Benth.; minima, subsimplex, pubescens, foliis cuneato-trifidis lobis obtusis brevibus, corollæ tubo exserto limbi lobis brevibus subintegris, capsula ovata obtusa. *Benth. in DC. Prodr.* vol. v. p. 555.

HAB. Strait of Magalhaens; Cape Negro, *C. Darwin, Esq.*

Herba perpusilla, vix pollicaris, glanduloso-puberula. *Caulis* erectus, simplex v. divisus, foliosus. *Folia* 1–3 lin. longa, cuneata, in lacinias 3 lineares obtusas ad medium fissa. *Flores* inter folia summa sessiles, pro planta magnæ. *Calyx* tubuloso-campanulatus, glabriusculus, breviter 5-fidus, lobis obtusis, apice puberulis, marginibus siccitate stratis. *Corollæ* tubus calycem superans, lobis oblongis oblique emarginato-truncatis, galea vix sub lobis concava. *Stamina* corollam subæquantia, antheris basi bi-aristatis.

A very minute species; also found at Coquimbo in Chili, by M. Gay. It is the southern representative of

its European ally, *E. officinalis*, L., and is still more nearly allied to a Himalayan plant, detected by my friend Mr. Edgeworth, whose researches in the Indian Alps have been rewarded with the discovery of some well-marked types of an American Flora, occurring together where they might have been least expected.

XXXVI. LABIATÆ, *Juss.*

1. SCUTELLARIA, *L.*

1. Scutellaria *nummulariæfolia*, Hook. fil.; parvula, glanduloso-puberula, caulibus gracilibus basi prostratis ascendentibus, foliis breviter petiolatis late elliptico-oblongis rotundatisve obtusis integerrimis subenerviis floralibus conformibus, floribus sparsis axillaribus breviter pedicellatis.

Hab. East coast of Tierra del Fuego, *C. Darwin, Esq.*

Caules graciles, diametro pennæ passerinæ, basi ramosi; ramis diffusis, simpliciusculis, elongatis, 2–4-uncialibus tenuiter puberulis. *Folia* $\frac{1}{2}$–$\frac{1}{3}$ unc. longa, subcoriacea, utrinque subglanduloso-puberula, apice rotundata, basi in petiolum brevem 1–$1\frac{1}{2}$ lin. longum angustata. *Flores* pauci, majusculi, foliis longiores, breviter pedicellati, pedicello calyce puberulo æquilongo. *Corolla* calyce ter longior, e basi sensim amplianta, rosea (?), pubescens, v. glabrata, lobis superioribus lateralibusque liberis brevibus obtusis, inferiore subpendulo, fauce piloso. *Achænia* immatura lævia.

Allied to the North American *S. antirhinoides*, Benth., but much smaller, and very different in the size of the flowers. A variety, also gathered by Mr. Darwin at Port St. Julian on the Patagonian coast, is more stunted, densely pubescent, with shorter leaves, and the lower lip of the corolla bearded internally. The discoverer of this species remarks that the climate and productions of the particular locality which it inhabits, are intermediate in character between those of Patagonia and Fuegia.

2. STACHYS, *L.*

1. Stachys *Chonotica*, Hook. fil.; herbacea, erecta, hispido-pilosa, foliis petiolatis oblongo-lanceolatis ovato-oblongisve obtusis acutisve basi cordatis obtuse crenato-serratis floralibus bracteæformibus inferioribus calyce longioribus, verticillastris 4–8-floris remotis, calycis hispidi campanulati dentibus ovatis aristatis, corollæ glabriusculæ tubo calyce longiore.

Hab. Chonos Archipelago; *C. Darwin, Esq.*

Species *S. sylvaticæ* simillima, sed folia angustiora, brevius petiolata et obtusiora crenisque obtusioribus; labium inferius corollæ minus profunde secta. *S. Macraei*, Benth., (planta admodum variabili) quoque approximat habitu formaque foliorum, sed tubo corollæ elongato exserto lobisque latioribus labii inferioris sat differt.

A plant, so very closely resembling the *S. sylvatica*, L., of Great Britain, that I long hesitated on the propriety of erecting it into a new species, but do so in concurrence with the opinion of Mr. Bentham. Mr. Watson, also, upon whose thorough knowledge of British plants, in all their exotic forms to which he has had access, the greatest reliance may be placed, has, with his usual kindness, given much attention to the present plant, and sums up the differences between it and European *S. sylvatica*, in the leaves of the latter not being so obtuse nor so obtusely serrate, and in the lateral lobes of the lower lip of the corollæ being more deeply divided. The leaves of the European *S. palustris*, L., however, he adds, vary from very acutely to quite as obtusely serrate.

Not being versed in the whole genus *Stachys*, which contains upwards of one hundred species, I was inclined to regard this plant as possibly intermediate between the *S. sylvatica* of Europe, and *S. Macraei* of Chili. Mr. Bentham, however, entirely dissents from such an opinion after a most careful review of its characters, and, I need hardly add, that on his knowledge and experience we may rely for the validity of the species.

Primula Magellanica. Lehm.

Reeve imp.

XXXVII. PRIMULACEÆ, *Juss.*

1. PRIMULA, *L.*

1. PRIMULA *farinosa*, Linn. *Sp. Pl.* p. 205. *Engl. Bot.* t. 6. *Duby in DC. Prodr.* vol. x. p. 44. *Gaud. in Ann. Sc. Nat.* vol. iv. p. 102, *et in Freyc. Voy. Bot.* p. 133. *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 606.

Var. *β, Magellanica.* P. Magellanica, *Lehm. Monogr. Prim.* p. 62. t. 6. *Duby, in DC. Prodr.* vol. x. p. 45. P. decipiens, *Duby, in DC. l. c.* (TAB. CXX.)

HAB. Strait of Magalhaens to Cape Horn, *Commerson, Capt. King, C. Darwin, Esq., J. D. H.* Falkland Islands, most abundant, *Gaudichaud, &c.*

The excellent plate, executed for this work by Mr. Fitch, enables the British botanist to form a just idea of the Antarctic state or variety of *P. farinosa*, L.; which, it will be seen, differs from the majority of those of Britain in the short peduncles of the white flower, in the position of the stamens, in the tube of the corolla, and in the colour of the flowers. The first of these characters is constant in all the Falkland Island and Magellanic specimens of this species, but is also seen in an individual of *P. farinosa*, gathered near Settle in Yorkshire by Mr. Tatham, for which I am indebted to my friend Mr. Watson, who not content with examining this plant with me, had the kindness to collate a suite of Antarctic specimens with many hundreds of British growth. The result of this examination has been, that except, perhaps, the colour of the flower, there is no constant character to distinguish the races of the opposite hemispheres, neither the length of the pedicels, of the calycine segments, of the tube of the corolla, nor the position of the stamens in the latter. If, again, we grant (with M. Duby) that the *P. Scotica*, Hook., is not even a variety of *P. farinosa*, the length of the pedicel is of still less value, for the North Scottish individuals are undistinguishable, except by the colour of the corolla, from specimens of var. *β*, gathered at Cape Horn by myself, and on Mount Tarn on the north shore of the Strait of Magalhaens, by Mr. Darwin, these localities being the northern and southern extremes of its range in the Southern Hemisphere.

Lastly, on comparing var. *β* with foreign examples of *P. farinosa*, their identity is still more evident; for the latter attain the same great size in Austria that the var. *β* often does in the Falkland Islands, whilst Arctic American specimens of the two are entirely alike.

One argument which militates against the common origin of the individuals from the opposite hemispheres, must not be overlooked; it is the absence of the plant, and, indeed, of the whole genus, in any part of the Andes south of 39° north lat.; a circumstance which makes it very difficult to account for its appearance in the two opposite temperate zones, if all the individuals of both hemispheres are supposed to have sprung from one parent.

PLATE CXX. *Fig.* 1, flower; *fig.* 2, the same; *fig.* 3, the same laid open; *fig.* 4, ripe capsule; *fig.* 5, seed; *fig.* 6, longitudinal section of the same:—all *magnified.*

2. ANAGALLIS, *Tourn.*

1. ANAGALLIS *alternifolia*, Cav. *Icones*, vol. vi. p. 3. t. 506. f. 2. *Duby in DC. Prodr.* vol. x. p. 71.

Var. *densifolia*, Lysimachia repens, *D'Urville, in Mém. Soc. Linn. Paris*, vol. iv. p. 606. *Gaud. in Freyc. Voy. Bot.* p. 133. *Hook. Ic. Plant.* t. 536.

HAB. Strait of Magalhaens; Port Famine, *Capt. King*; Wollaston Island, *C. Darwin, Esq.*; Falkland Islands, *D'Urville, Mr. Wright, J. D. H.*

It appears to me that two very distinct species of this genus have been confounded, partly together, and partly with the *A. tenella*, L., of Europe. The first is confined to the damp western portions of middle and southern Chili, Fuegia, and the Falkland Islands, and there are two or perhaps three varieties of it; I take it to be the *A. alternifolia* of Cavanilles, a variable plant, with the peduncles of the same length as, or not much exceeding, the leaves, and the capsule shorter than the calyx. The figure of that author is very inaccurate and at variance with his description; for the plant is represented erect, instead of creeping, and the leaves scattered, though said to be, approximate. Supposing Cavanilles' plant to form one variety of *A. alternifolia*, a second is larger and also creeping, with prostrate branches, 8–10 inches long, bearing broader, rounded and more acute leaves; it has been collected in Valparaiso by Mr. Cuming and Mr. Bridges. A third, intermediate between this and the Fuegian form, has the leaves more crowded, ovate-oblong, and smaller; it is possibly the state figured by Cavanilles, and has been gathered at Concepcion by Capt. King, at Valdivia by Mr. Bridges, and on the Andes of Mendoza by Dr. Gillies (*Ruellia cæspitosa*, Gill. MSS.; and *Anagallis herpestoides*, Gill. MSS.). The fourth variety is what I have called *densifolia*: its leaves and stem are much smaller and crowded, and the whole plant is succulent.

Another extra-tropical South American *Anagallis* is the *A. filiformis*, Link, (*A. tenella*, *β. filiformis*, St. Hil.), which approaches *A. tenella* so very closely, that M. St. Hilaire has united them specifically. It differs from *A. alternifolia* in the leaves being opposite, the stem slender, the peduncles longer, the calycine pieces narrower and twice as long as the capsule, and the whole plant not so succulent; from the European *A. tenella* in the leaves never being so broad, in the longer peduncles and rigid stems.

The variety *densifolia* has a large capsule, always equalling the calyx in length, thus differing from the plant figured by Cavanilles. The capsule, though described by D'Urville as having the dehiscence of a *Lysimachia*, evidently opens transversely in the specimens I have examined, though it is sometimes, from pressure, split at the top also. Its habit resembles the Abyssinian *A. serpens*, Hochst.

3. SAMOLUS, *L.*

1. Samolus *littoralis*, Brown, *Prodr.* p. 428. *Duby in DC. Prodr.* vol. x. p. 78. Scheffieldia repens, *Forst. Nov. Gen.* p. 18. t. 9.

Hab. Chonos Archipelago and Cape Tres Montes, *C. Darwin, Esq.*

A plant common to New Holland, New Zealand, and South Chili, and very variable in the size of its parts in all these countries. I have not seen Chilian specimens from a lower latitude than Valdivia, between which and Cape Tres Montes it seems limited.

2. Samolus *spathulatus*, Duby, *in DC. Prodr.* vol. x. p. 74. Androsæa spathulata, *Cavanilles Icones*, vol. v. p. 56. t. 484. f. 1.

Hab. Strait of Magalhaens; Port Gregory, *Capt. King*. Elizabeth Island, *C. Darwin, Esq.*

The raceme, in most of Capt. King's specimens, is so much abbreviated that the flowers are almost capitate. The range of the species, between Port Desire and the Strait of Magalhaens, is remarkably limited.

XXXVIII. LENTIBULARIEÆ, *Rich.*

1. PINGUICULA, *Linn.*

1. Pinguicula *Antarctica*, Vahl, *Enum.* p. 192. *Alph. DC. Prodr.* vol. x. p. 31. P. obtusa, *Banks et Sol. MSS. in Bibl. Banks.* (Tab. CXIX.)

Hab. Strait of Magalhaens; Port Famine, *Capt. King*; Good Success Bay, *Banks and Solander*; south part of Fuegia, *C. Darwin, Esq.*; Hermite Island, Cape Horn, *J. D. H.*

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Pinguicula antarctica. Vahl.

A very pretty little plant, the representative of the British *Pinguicula Lusitanica*, L., from which it differs in the narrower segments of the corolla and shorter spur. It is not uncommon on moist rocks in Fuegia.

PLATE CXIX. *Fig.* 1, lateral, and *fig.* 2, front view of flower; *fig.* 3, calyx, germen, and stamens; *fig.* 4, stamen; *fig.* 5, germen; *fig.* 6, transverse section of the ovarium; *fig.* 7, ripe fruit; *fig.* 8, seed; *fig.* 9, embryo:—all *magnified*.

XXXIX. PLUMBAGINEÆ, *Juss.*

1. STATICE, *Tourn.*

STATICE *Armeria*, Linn., *Sp. Pl.* p. 394. *Engl. Bot.* t. 226. S. cæspitosa, *Poiret, Encycl.* p. 235. *Gaud. in Ann. Sc. Nat.* vol. v. p. 102. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 606.

Var. *β*, *alpina*; *Ed. Cat.* p. 2. *Hook. Brit. Fl.* p. 270.

HAB. Var. *α*, Strait of Magalhaens, *Commerson*; Port Famine, *Capt. King*; Falkland Islands, most abundant near the sea; *Gaudichaud, &c.* Var. *β*, on the mountains of Fuegia, *C. Darwin, Esq., J. D. H.*

There can, I think, be no question as to this being identical with the *S. Armeria* of the northern hemisphere; if any specific or other distinction exists, it has eluded Mr. Watson's and my examination. Both as an alpine and especially as a sea-side plant, its habits are those of the common Sea-Pink.

XL. PLANTAGINEÆ, *Venten.*

1. PLANTAGO, *Linn.*

1. PLANTAGO *maritima*, Linn., *Sp. Pl.* p. 165. *Engl. Bot.* t. 175. P. juncoides, *Lam. Illust. Gen.* n. 1683.

HAB. Strait of Magalhaens; Port Famine and Port Gregory, *Capt. King*.

I am not aware of any South American stations for this plant except those mentioned above; it is also a native of the Cape of Good Hope, but not of Australia or New Zealand.

2. PLANTAGO *barbata*, Forst.; laxe cæspitosa simplex v. ramosa, foliis erectis stellatim patentibus recurvisve lineari-lanceolatis anguste lineari-elongatisve subacutis carnosis remote dentatis basi scariosis barbatis glabratisve, pedunculis folio subæquantibus, spicis 1–3-floris, capsulæ late obovatæ medio circumscissæ parte inferiore calycem vix excedente. P. barbata, *Forst. Comm. Goett.* vol. ix. t. 4. P. pauciflora, *Lam. Illust. Gen.* n. 1684. P. pauciflora, *β*, parva, *Barneoud Monogr. Plantag.* p. 17. P. polymorpha, *Banks et Sol. MSS. in Bibl. Banks. cum icone.*

Var. *α*, *barbata*; foliis stellatim patentibus spathulato-lanceolatis dentatis basi barbatis.

Var. *β*, *elongata*; caule simpliciusculo, foliis erectis anguste et longissime lineari-spathulatis obtusis remote sinuato-dentatis basi barbatis.

Var. *γ*, *imberbis*; caule ramoso, foliis patulis lanceolatis obtusis remote dentatis basi sub-barbatis. P. imberbis, *Hook. fil. MSS. in Part* 1. p. 66.

HAB. Var. *α*, Strait of Magalhaens, *Commerson*; Tierra del Fuego, *Banks and Solander, Forster*. Var. *β*, Port Gregory, *Capt. King*. Var. *γ*, Port Famine, *Capt. King*.

A highly variable plant; always, however, in all the specimens which I have examined, retaining the characters of a short capsule dehiscing across the middle, the broad lower half of which is as long as, or very little longer than the calyx, and of a different form from the narrow obconical elongated analogous organ of *P. monanthos*,

D'Urv. The nearest allies of this plant are its Australian and New Zealand representative, the *P. carnosa*, Br. (vid. Flor. Antarct. Pt. 1. p. 65), and the *P. Andicola*, Gill. MSS.; the former of these differs in its shorter capsule, differently shaped seeds, crowded, more fleshy foliage; the latter in its curious root and broader leaves, which are, however, very unimportant characters.

The Port Gregory specimens, of which I have made variety *β*, are perhaps drawn up, for the leaves are six inches long, which is at least four times the length of those of the ordinary state of the species.

3. Plantago *monanthos*, D'Urv.; caulibus ramosis dense cæspitosis, foliis perplurimis basi arcte vaginantibus erectis subsquarrosis stellatim patentibusve anguste lineari-elongatis obtusis obscure dentatis marginibus cartilagineis pedunculis multoties longioribus basi glaberrimis, spiculis 1–4-floris, capsula anguste elavata infra medium circumscissa parte inferiore calyce bis terve longiore. P. monanthos, *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 606. *Gaud. in Freyc. Voy. Bot.* p. 133. *Barneoud, Monogr. Plantag.* p. 17. *exclud. syn.* P. carnosæ, *Br.* (Tab. CXXI.)

Var. *α*, foliis erectis subsquarrosisve lineari-elongatis flaccidis.

Var. *β*, *abbreviata*; caulibus cæspitosis, foliis brevioribus substellatim patenti-recurvis.

Var. *γ*, *muscoides*; caulibus densissime cæspitosis, foliis brevibus arcte imbricatis marginibus cartilagineis albis.

Hab. Var. *α*, Falkland Islands, *D'Urville, J. D. H.*; Hermite Island, Cape Horn, in moist places, *J. D. H.* Var. *β*, Hermite Island, amongst rocks; var. *γ*, the same locality, in clefts of exposed rocks, *J. D. H.*

A very different plant from the *P. carnosa*, Br., under which M. Barneoud has included it, especially in the habit, stems, foliage, comparative length of the peduncle, shape of the capsule and form of the seeds.

Plate CXXI. *Fig.* 1, flower and bracteæ; *fig.* 2, germen; *fig.* 3, ripe fruit; *fig.* 4, transverse section of ditto; *fig.* 5, upper half of ditto, with dissepiment and seeds; *fig.* 6 and 7, dissepiment and seeds; *fig.* 8 and 9, front and back view of seeds; *fig.* 10, longitudinal section of seed:—all *magnified*.

Plantago *hirtella*, H. B. K., *Nov. Gen. et Sp.* vol. x. p. 187. t. 127. *Barneoud, Monogr. Plantag.* p. 18.

Hab. South Chili; Cape Tres Montes, *C. Darwin, Esq.*

Not at all an uncommon Chilian and Buenos Ayrean plant, exceedingly variable in the breadth and pubescence of the leaves, and also in the size of the flowers, which in these specimens are larger than in the figure quoted. It is also a Brazilian species, and occurs on the mountains of Peru and Columbia, and is very nearly allied to the *Pl. Virginica*, L. The character of the segments of the corolla being patent or conniving is scarcely tenable in this plant and its allies.

XLI. POLYGONEÆ, *Juss.*

1. POLYGONUM, *L.*

1. Polygonum *maritimum*, Linn. *Sp. Pl.* p. 519. *Engl. Bot. Suppl.* t. 2804. *Meisner, Monogr. Polyg.* p. 89.

Hab. South Chili; Cape Tres Montes, *C. Darwin, Esq.*; Strait of Magalhaens; Port Famine, *Capt. King.*

There appears no difference between these specimens and those of British growth. In the southern hemisphere the species occurs only at the Cape of Good Hope and in South Chili.

Fitch del. et lith.

Reeve imp.

Plantago monanthos. D'Urv.

2. RUMEX, *L.*

1. RUMEX *cuneifolius*, Campd., *Monogr. des Rum.* p. 95. *Fl. Antarct.* pt. 1. p. 67.

HAB. South Chili; Chonos Archipelago, *C. Darwin, Esq.*

2. RUMEX *crispus*, Linn., *Sp. Pl.* p. 476. *Engl. Bot.* t. 1998. R. Patientia (?), *Gaudichaud in Ann. Sc. Nat.* vol. vi. p. 101. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 605.

HAB. Falkland Islands; Berkeley Sound, undoubtedly introduced.

My specimens, though imperfect, are, I think, referable to this species.

3. RUMEX *Acetosella*, Linn., *Sp. Pl.* p. 481. *Engl. Bot.* t. 1674. *Gaudichaud and D'Urville, l. c.*

HAB. Falkland Islands; abundant near the settlements and on the mountains; *Gaudichaud, &c.*

This, and the *R. Acetosa*, L., included in Gaudichaud's list, I consider undoubtedly as introduced plants, of which the seeds, being eaten by the birds, are by their agency transported to otherwise inaccessible cliffs.

XLII. CHENOPODIACEÆ, *Juss.*

1. CHENOPODIUM, *L.*

1. CHENOPODIUM *glaucum*, Linn., *Sp. Pl.* p. 320. *Engl. Bot.* t. 1454.

Var. β, *divaricatum*; prostratum, ramosum, ramis gracilibus divaricatis.

HAB. Var. β, Chonos Archipelago; *C. Darwin, Esq.*

Evidently the *C. glaucum* of Great Britain, though the stem is more diffusely branched than in most English individuals. A precisely similar variety inhabits British North America, but I have seen no specimens from any part of the New World between that country and South Chili.

2. CHENOPODIUM *macrospermum*, Hook. fil.; glaberrimum, non glaucescens, caulibus validis succulentis basi divaricatim ramosis, foliis petiolatis deltoideo-oblongis obtusis sinuatis carnosis, racemis compositis densifloris aphyllis bracteatis, seminibus majusculis erectis subtilissime reticulatis.

HAB. Falkland Islands; Berkeley Sound and St. Salvador Bay, near the sea; *C. Darwin, Esq., J. D. H.*

Caules e radice descendente fusiformi solitarii v. plurimi, prostrati, 3–5-unciales, canaliculati v. angulati, crassi, diametro pennæ anserinæ. *Folia* longe petiolata, petiolo $\frac{1}{2}$–$\frac{3}{4}$ unc. longo, lamina aquilonga carnosa, utrinque opaca, siccitate flavo-virescentia. *Flores fructusque* multoties majores quam in affinibus.

This very distinct species has been used as a pot-herb by the colonists of the Falkland Islands, and was described to me as excellent. The great size of the seed at once distinguishes it from its nearest European allies, *C. rubrum*, L., and *C. polyspermum*, L. I have not included these two species under the genus *Blitum* because the seeds of *C. glaucum* are more frequently horizontal than erect, and neither of them possesses a calyx which is materially thickened after flowering.

XLIII. PROTEACEÆ, *Juss.*

1. EMBOTHRIUM, *Forst.*

1. EMBOTHRIUM *coccineum*, Forst., *Gen. Plant.* t. 8. *Comm. Soc. Reg. Goett.* vol. ix. p. 24. *Lamarck, Encycl.* vol. ii. p. 351. *Illust. Gen.* n. 1284. t. 55. f. 2. *Brown, in Linn. Soc. Trans.* vol. x. p. 196.

Hab. Strait of Magalhaens, *Commerson*; Port Famine, *Capt. King*; Fuegia, *Banks and Solander, Forster, &c.*

This very handsome plant seems confined to the extreme southern part of South America, without, however, reaching Cape Horn itself; it is very nearly allied to the Chilian *E. lanceolatum*, R. and P., but differs in the nervation of the leaves.

2. LOMATIA, *Brown.*

1. Lomatia *ferruginea*, Brown, *in Linn. Soc. Trans.* vol. x. p. 200. Embothrium ferrugineum, *Cavanilles, Icones*, vol. iv. p. 59. t. 385.

Hab. Chonos Archipelago, *C. Darwin, Esq.*

Like the former, this species has a very confined range, inhabiting the country between Valdivia and the Chonos Archipelago, including Chiloe, on the west side of the Andes only; and, according to Cavanilles, it is limited to places occasionally overflowed by the sea. Mr. Bridges states that the native name is "Romarilla".

XLIV. SANTALACEÆ, *Br.*

1. NANODEA, *Gærtner, fil.*

1. Nanodea *muscosa*, Gærtner, *de Fruct.* vol. iii. p. 251. t. 225. *Gaud. in Ann. Sc. Nat.* vol. v. p. 101. t. 2. f. 3, *et in Freyc. Voy. Bot.* p. 442. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 605. *Banks et Sol. MSS. in Bibl. Banks. cum icone.* Balexerda muscosa, *Commerson, MSS.*

Hab. Strait of Magalhaens, *Commerson*; Port Famine, *Capt. King*; Fuegia, Good Success Bay, *Banks and Solander*; Hermite Island, *J. D. H.*; Falkland Islands, very common; *Gaudichaud, &c.*

2. ARJOONA, *Cav.*

1. Arjoona *Patagonica*, Homb. et Jacq.; stricta, erecta, ramosa, ramis simplicibus glaberrimis, foliis sparsis patulis breviter subulatis rigidis glaberrimis nervosis, inflorescentia sericeo-tomentosa capitata, bracteis concavis acutis tubo perianthii ½ brevioribus. A. Patagonica, *Homb. et Jacq. in Voy. au Pole Sud, Bot. Dicot.* t. 15. A. *sine descript.*

Hab. Strait of Magalhaens; Port Peckett, *Messrs. Hombron and Jacquinot.*

This plant, of which I have examined specimens gathered by Capt. King on the Patagonian coast, is very probably only a variety of the *A. tuberosa*, Cav., of the same country, which varies in the size of the leaves, and in their being smooth, pubescent, or tomentose. In Capt. King's specimens they vary from 1–4 lines long.

2. Arjoona *pusilla*, Hook. fil.; caule erecto gracili simplici v. diviso, foliis flaccidis supius recurvis elongato-linearibus acuminatis marginibus glaberrimis subenerviis, floribus paucis, bractea exteriore majuscula cymbiformi obtusa glabrata, corolla extus sericeo-tomentosa fauce ampliata inter stamina fasciculis inconspicuis pilorum articulatorum aucta, stigmatibus 3 brevibus.

Hab. Strait of Magalhaens; Port Gregory, *Capt. King*; Cape Negro, *C. Darwin, Esq.*

Herba bi-tri-pollicaris. *Caulis* gracilis, erectus, simplex v. basi bis terve divisus. *Folia* flaccida, suberecta, ½–¾ unc. longa, sub 1 lin. lata, medio uninervia, apicibus acuminatis marginibus plerumque recurvis. *Bracteæ* 2½ lin. longa, dorso glabrata, marginibus ciliatis, bracteolis interioribus in tubum apice inæqualiter 3–4-fidum ovario

subadhærentem obscure coalitis, extus pilosis. *Perianthium* ½–¾ unc. longum, extus pilis fulvis tomentosum, tubo gracili superne amplinto, laciniis ovato-oblongis, fauce inter stamina barbata, pilis brevibus flaccidis articulatis creberrimeque transversim striatis. *Stamina* filamentis breviusculis, antherarum apicibus exsertis. *Stigmata* 3 parva, inter tubum corollæ retracta.

A very distinct species from the former, in the foliage especially. Hitherto it has been found in the Straits of Magalhaens only.

XLV. THYMELEÆ, *Juss.*

1. DRAPETES, *Lam.*

1. DRAPETES *muscosa*, Lamarck, *Journ. d'Hist. Nat.* vol. i. p. 386. t. 10. f. 1. *Gærtner, de Fruct.* vol. iii. p. 199. t. 215. *Juss. in Annales du Mus.* vol. vii. p. 479. *Poiret, Encycl. Suppl.* vol. ii. p. 523. t. 915. f. 1. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 605. *Banks et Sol. MSS. in Bibl. Banks. cum icone.*

HAB. Strait of Magalhaens, *Commerson*; and throughout Fuegia, on the mountains, *Banks and Solander, Capt. King, &c.* Falkland Islands, *D'Urville, J. D. H.*

A curious little plant, confined in its geographical range to the mountains of Antarctic America, and represented in New Zealand by a very similar one, forming its only congener, the *D. Dieffenbachii*, Hook. (Lond. Journ. of Bot. vol. ii. p. 497. t. 17). However similar the two plants are in habit and in their more important structural characters, differences exist which some botanists may deem of generic value; these are, the cylindrical continuous base of the perigonium, thickened faux and capitate glandular stigma of the New Zealand species, contrasted with the jointed angulated tube of the perigonium in the *Antarctic* American plant, which has an eglandulose faux and plumose stigma. The thickening of the throat of the perianth in *D. Dieffenbachii*, which almost causes the faux to be closed with scales, is effected by the three nerves of each segment being there joined by anastomosing venules, whilst in *D. muscosa* they run free to the apex of the segment.

XLVI. URTICEÆ, *Juss.*

1. URTICA, *L.*

1. URTICA *Darwinii*, Hook. fil.; caule gracili erecto sparsissime piloso v. glaberrimo, foliis membranaceis oppositis petiolatis ovatis acuminatis grosse æqualiter crenato-serratis basi rotundatis 3-nerviis utrinque subtilissime punctatis tenuiter puberulis, petiolo gracili, stipulis lineari-oblongis subacutis, floribus glomeratis glomerulis setosis in spicas graciles interruptas petiolo longiores dispositis.

HAB. Chonos Archipelago, *C. Darwin, Esq.*

Caulis penna corvina tenuior, flaccida, glaberrima, v. pilis raris albidis valde inconspicuis sparsa, internodiis 1½ uncialibus. *Stipulæ* 3 lin. longæ, subacutæ. *Petioli* ½–¾ unc. longi, graciles parce puberuli. *Folia* 2–3 unc. longa, 1½–1½ lata, grosse crenato-serrata, segmentis sinubusque latis acutis. *Pedicelli* axillares, subquaterni, patuli, penduli, petiolo ½ v. bis longiores. *Flores* in glomerulos sparsos congesti; glomerulis setosis, paucis inferioribus masculis ceteris fœmineis.

In appearance this very closely resembles the *Filea pumila* of North America, though it is more nearly related to the *Urtica gracilis* of the United States. Both this latter plant and the *U. Darwinii* differ from *U. dioica*, L., in the much larger flowers and achænia.

2. URTICA *Magellanica*, Poir.; caule valido erecto hispido-setoso, foliis subcoriaceis rugosis oppositis petiolatis ovatis ovato-lanceolatisve acuminatis basi cordatis argute serrato-dentatis, utrinque setosis subter leviter puberulis, stipulis lineari-oblongis acutis, floribus glomeratis, glomerulis setosis in spicas interruptas petiolo breviores v. elongatas dispositis. U. Magellanica, *Poiret, Encycl. Suppl.* vol. iv. p. 323.

HAB. Strait of Magalhaens, *Commerson*; Port Famine, *Capt. King*.

Caulis 2-pedalis erectus, validus, setis plurimis patentibus obtectus. *Petioli* ½–1 unc. longi. *Folia* 2½–3½ uncialia, latitudine varia, basi plus minusve cordata rarius rotundata. *Racemi* seu spicæ penduli, monoici v. dioici, petiolo longiores rarius abbreviati. *Flores* majusculi, fœminei compressi, orbiculares, achænio conformes.

Not an uncommon species from Valparaiso to the Strait of Magalhaens, differing from the preceding in its robust habit, different texture of the leaves, and setose stem and foliage, all, I fear, very unimportant characters in this genus, but whose validity in the present species I have not sufficient materials for ascertaining. The characters drawn from the length of the racemes is a variable one, those bearing male flowers especially being the shortest, and sometimes, as described by Poiret, shorter than the petioles. The present appears very closely allied indeed to a South African species, and it may even be considered doubtful whether both are not states of *U. dioica*, with unusually large flowers.

One of Anson's vessels, when detached from his squadron, put into a Bay near the western entrance of the Strait of Magalhaens, and recruited her crew, who were paralyzed by scurvy, by means of Nettle tops, most probably the produce of this or the former species.

The *Urtica laurifolia*, Poiret, stated to have been brought from the Strait of Magalhaens by Commerson, does not appear to belong to this genus. I am wholly unacquainted with the *U. gigantea*, of the same author, also from the Strait of Magalhaens.

2. PILEA, *Lindl.*

1. PILEA *elliptica*, Hook. fil.; suberecta, caule debili herbaceo parce ramoso, foliis longe et graciliter petiolatis membranaceis ellipticis utrinque subobtusis grosse crenato-serratis trinerviis super subterque pilis appressis minimis conspersis, floribus masculis in umbellam capitatam longe pedicellatam congestis, femineis ad basin pedunculi sessilibus glomeratis, achænio orbiculari compresso apice oblique emarginato.

HAB. Chonos Archipelago; *C. Darwin, Esq.*

Caules uni-bipedales, crassitie pennæ corvinæ, rufescentes, punctis albidis elongatis notati. *Petioli* longitudine varii folio longiores v. breviores. *Stipulæ* membranaceæ, late ovatæ. *Folia* lœte viridia, membranacea, exacte elliptica, imo basi obscure cordata, magnitudine varia, ½–2 unc. longa, grosse sed æqualiter crenato-serrata; parenchyma corpusculis fusiformibus e epidermide translucida oculo nudo manifestis pilos appressos simulantibus farctum. *Pedunculi* petiolo æquilongi v. longiores, apice umbellulum simplicem florum masculorum gerentes, basi glomerulo florum fœmineorum aucti. Fl. MASC. *Perianthium* 4-partitum, laciniis late ovatis acuminatis inflexis. Fl. FŒM. *Perianthium* valde compressum, 3-partitum, lacinia postica cucullata lateralibus oblongis multoties longiore. *Achænium* planum.

A very distinct species, confined to the S.W. portions of *Chili* between Valdivia and the Chonos Archipelago, a tract which may be considered as partaking of the Chiloteau botany, the latter itself being a division of the Chilian Flora, only separable by the amount of specific difference from the other extra-tropical regions of western South America.

The appearance of the so-called pubescence of this species and many other *Urticeæ* is curious, and caused by the presence of numerous white fusiform raphides attenuated at both ends, which are scattered abundantly throughout

Fitch del. et lith.

Reeve imp.

Fagus Antarctica. Forst.

the parenchyma of the leaves and immediately beneath the surface of the stem; from the tenuity of the epidermis, and transparency of the leaves when dried, they form prominences on the cuticle of a white colour, closely simulating the laterally attached hairs of *Cruciferæ*.

XLVII. EMPETRACEÆ, *Nutt.*

1. EMPETRUM, *L.*

1. Empetrum *rubrum*, Vahl, *MS. et Willd. Sp. Pl.* vol. iv. p. 713, *ex Banks et Sol. MS. in Bibl. Banks. cum icone. Gaud. in Ann. Sc. Nat.* vol. v. p. 103, *et in Freyc. Voy. Bot.* p. 134. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 608. "Bruyère à fleurs d'un vert blanchatre," *Pernetty, Voy.* vol. ii. p. 64.

Hab. South Chili, Fuegia, and the Falkland Islands, most abundant, *Commerson, Banks and Solander*, and all future voyagers.

I am unable to detect any characters to separate the *Empetrum rubrum* from *E. nigrum*, beyond what is afforded by the colour of the berries. Though many of the northern specimens of *E. nigrum* are perfectly similar to Fuegian specimens of *E. rubrum* in every other respect, yet almost all the Falkland individuals, and many of those of Cape Horn, are more tomentose than any specimens of the Northern species that I have examined. Under these circumstances, the plants from the opposite hemispheres may be regarded as representative species, or varieties of the same; but, since all the specimens from the southern hemisphere present one constant character, distinguishing them from those of the northern, and since neither is known to occur in any part of the New World between the parallels of 45° N. and 33° S., I feel myself obliged to attach specific importance to the otherwise very trifling differences in the colour of the fruit.

The *Empetrum rubrum* is a very abundant western extra-tropical South American plant, from the latitude of Concepcion on the Pacific coast, and Mendoza on the Andes, to Cape Horn. In the latter country, as in the Falkland Islands, this species altogether simulates *E. nigrum* in the localities it affects, in its habit and mode of growth, stature, in the forms its varieties assume, and in the economy of nature, affording food to wild-geese, and, in Fuegia, to a bird allied to the grouse. The stems and leafy branches are much used for fuel in the Falklands, where the plant is called "Diddle-dee", they are especially employed in kindling fire, for even when sodden with rain, they speedily ignite, and burn with a bright and hot flame.

The affinities of this genus, or rather order, are yet undefined. I am inclined to adopt the opinion of Jussieu in allying it to *Ericeæ*, from the habit, foliage, the bracteæ, calyx, and texture of the corolla and anthers and some other characters.

XLVIII. CUPULIFERÆ, *Rich.*

1. FAGUS, *L.*

1. Fagus *Antarctica*, Forst., *ex Banks et Sol. MS. in Mus. Banks. cum icone. Hook. Bot. Journ.* vol. ii. p. 15. t. VI. Calucechinus Antarctica, *Homb. et Jacq. in Voy. au Pole Sud, Bot. Dicot.* t. 14. *Z. et Bot. Mbuocot. Phan.* t. 6. ♀. C. Montagni, *Homb. et Jacq. l. c. Bot. Dicot.* t. 8. ♂. (Tab. CXXIII.)

Hab. South Chili and throughout Fuegia, very abundant, *Commerson, Banks and Solander*, and all succeeding voyagers.

This species and the following, form together so predominant a feature in the Fuegian landscape, that, though accurately described by several voyagers, especially Cook, King, and Fitzroy, and in the graphic narrative of my

friend Mr. Darwin, it is advisable to sum up the principal facts connected with their history, adding some little from personal observation. These remarks will be the more appropriately introduced here, from the two principal species having been first imported into England by the Antarctic Expedition, and now promising to become useful and ornamental additions to our forests; as, also, from their geographical range having been used as an indication of the limits of the Antarctic Flora.

The *Fagus Antarctica* has always been recognized as a true Beech, from the very marked resemblance its deciduous-foliage bears to that of the European *F. sylvatica*. The other common Fuegian species, *F. betuloides*, with coriaceous leaves of a deep green hue very similar to those of the Scottish Birch, was, up to the discovery of its flowers, considered to be a *Betula*. The habit of both species, however, is essentially that of the Beech, and so are the form of trunk, smooth bark, and especially the spreading ramification and horizontal divaricating ramuli; whilst their flowers and fruit resemble so closely in all but size, those of the European *Fagus sylvatica*, that I consider them as undoubted congeners of that plant.

I have elsewhere (vid. ante p. 277) alluded to the very common error of holding the locality in which a certain species particularly abounds, to be the principal habitat of the order or genus to which it belongs; this often arises from attaching a greater importance to the spread of the species than that of the genus. Naturalists unacquainted with the range of the Beeches, will be surprised to hear that they are more characteristic of the temperate and cold latitudes of the southern, than of the northern hemisphere, even in the proportion of five to one. Thus, one species alone is European, and one American; two are found on the mountains of Java; one is characteristic of the Alps of Tasmania, where the only Antarctic representatives of the Australian Flora are found; four inhabit the high mountains of the northern or lower levels in the middle and southern Islands of New Zealand; and, lastly, as many as seven * have been described from Chili and Fuegia.

Of the seven so called Chilian and Fuegian species, three are well marked, and afford instructive examples of the succession of species in proceeding northward from Cape Horn; they are the *F. Antarctica*, *betuloides*, and *obliqua*; the others, which may be varieties of the above, though from the want of copious suites of good specimens I advance this opinion with much hesitation, are *F. Pumilio*, Poepp. and Endl., *F. procera*, P. and E., *F. Dombeyi*, Mirb., and *F. alpina*, P. and E.

The *Fagus Antarctica*, justly so named, ascends even at Cape Horn much higher than *F. betuloides*, and nearly to the summits of the mountains, which are perhaps 1000 feet below the assumed level of perpetual snow in that latitude, while at the sea it forms much the larger tree of the two. Supposing the continent of America to have been produced indefinitely to the southward, in a free ocean, the *F. Antarctica* would be found extending to as high a parallel as 62° S., whilst the *F. betuloides* would cease at the 60th degree: assuming that both species followed the same ratio of ascent that very many other Cordillera plants do, which ascend from the level of the sea in Fuegia to a considerable elevation in a lower latitude.

Fagus betuloides, though by far the most prevalent species in Hermite Island, and, indeed, throughout Fuegia, has its principal parallel about the Strait of Magalhaens, where it becomes a very large tree. It forms the prevailing feature in the scenery of Tierra del Fuego, especially in winter time, from having persistent, evergreen leaves, and from its upper limit being sharply defined and contrasting with the dazzling snow that covers the matted but naked branches of the *F. Antarctica*, which immediately succeeds it. Its upper limit at Cape Horn (lat. 56°) is about 800 feet; in the northern parts of Tierra del Fuego it reaches 1,400 feet; and, if the *F. alpina*, P. and E., be a state of the same species in its most northern locality, its level in lat. 36° is between 5,000 and 8,000 feet.

The following notice of the dimension the Evergreen Beech attains in the Strait of Magalhaens, is extracted from Capt. King's excellent 'Voyage of the Adventure and Beagle' (p. 576). "At Port Famine and in the neigh-

* An eighth, *P. glutinosa*, Poepp., is no *Fagus* at all, but, as my friend Mr. Miers assures me (and he has examined authentic specimens in M. Delessert's Herbarium), a species of *Eucryphia*.

bourhood, the Evergreen Beech grows in the greatest abundance and reaches a very large size. Trees of this species three feet in diameter, are abundant; of four feet there are many; and there is one tree (perhaps the very same noticed by Commodore Byron), which measures seven feet in diameter for seventeen feet above the roots, and then divides into three large branches, each of which is three feet through. This venerable tree seemed to be sound, but from our experience of several others that were cut down, might be expected to prove rotten in the centre. This tendency to decaying in the heart may be attributed to the coldness of the schistose sub-soil upon which the trees are rooted, as well as the perpetual moisture of the climate."

The wood of these trees Capt. King describes as being heavy and far too brittle for masts, or even boat-hook staves; but it cuts up into tolerable planks, which, if seasoned, might serve for ship-building. During our sojourn in Hermite Island, Capt. Ross caused several thousand small trees, of both species, to be felled and barked; these we transported to the Falkland Islands, in which tree-less country they were highly prized for roofing houses, &c. The deciduous species appeared to afford the better wood of the two.

A more striking contrast between two so very closely allied plants, cannot well be imagined, than between *F. Antarctica* and *F. betuloides*, arising from the evergreen foliage of the latter being of a totally different texture and aspect from that of the former. Surely so strongly marked a difference between otherwise very nearly allied species, growing side by side under perfectly similar conditions, is a strong argument in favour of their being originally separate creations. We see, too, how the adaptation of particular forms of vegetation to certain climates, even in this remote quarter of the globe, is exemplified in these trees; though both do grow together abundantly, they still have their preferences, the evergreen glossy foliage prevailing on the western coast, where the climate is damp and equable, whilst the deciduous-leaved plant seeks the heights more exposed to the vicissitudes of the weather, or the drier eastern parts of Fuegia, where the *F. betuloides* will not succeed. So it is with us in Great Britain; our glossy-leaved evergreens, whether native or introduced, thrive best in the climate of the west coast, where the summers are colder, the winters warmer, and all the seasons more humid than they are on the east.

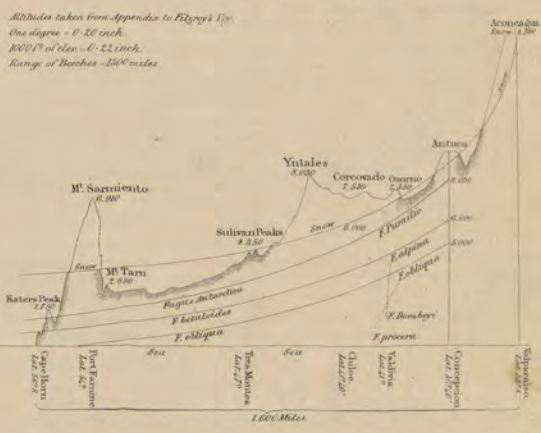
The third species of *Fagus*, the *F. obliqua*, replaces *F. Antarctica* in South Chili, occupying the flanks of the Andes, between the altitudes of 1,000 and 5,000 feet, where it is the prevailing forest-tree. It appears to inhabit the level of the sea in the parallel of the Strait of Magalhaens, and is probably the third species of Beech alluded to by Capt. King (l. c. p. 576), for that voyager does not seem to have distinguished the *F. Pumilio* as a species.

The accompanying cut will explain better than words, the order of succession in latitude and in elevation that South American *Fagi* follow. Their southern ranges may be ascertained with tolerable precision, the exact altitude they attain in the two northern positions is more doubtful. The positions taken are, commencing from the southward, 1st, Hermite Island, lat. 56°; 2nd, Strait of Magalhaens, lat. 54°; 3rd, Antuco in Chili, lat. 36°40′. The upper curve indicates the lower level of perpetual snow; the others, the upper limit of the tree whose name is found immediately under.

From the want of a suite of specimens I cannot speak with much confidence of the Chilian species, *F. alpina* and *F. Pumilio*, the first appears, from the plate and description, a variety of *F. betuloides*, and, from occupying the position that *F. betuloides* would hold relatively to the others in South Chili, I have introduced it as such into the cut. The *F. Pumilio* is even more probably a variety of *F. Antarctica*. Both are said to occupy great heights in South Chili, the latter indeed only existing there as a stunted tree. There are still two other South Chilian species, *F. procera*, P. and E., and *F. Dombeyi*,* Mirb.; they inhabit the level of the sea in the parallel of 41°. The first I am inclined to regard as a variety of *F. obliqua*, or rather a large-leaved state of that plant descending to the coast; the second is a similar form of *F. betuloides*. If my supposition prove correct, both species afford examples

* This is one kind of "Roble" of Capt. King's Narrative (p. 280); in speaking of the woods of Chiloe, he says, "Roble, (*Fagus obliqua*, Mirb.), is a large tree, and, from the durable quality of its timber, considered the

of mountain plants, having the upper limit in elevation which they attain sharply defined, throughout several degrees of latitude, but which descend and assume other aspects in a warmer climate. This, also, I have attempted to express on paper by dotted lines drawn down to the sea-level, from the Chilian positions of *F. betuloides* and *F. obliqua*. The abrupt termination of all the Beeches at about lat. 35°, occurs where the equally sudden change in the climate of northern and southern Chili takes place. These trees, like all extra-tropical plants, require a certain degree of cold, and in pursuing their range towards the warmer parallels, they ascend the mountains. They are, however, even more dependent upon humidity and an equable climate than on temperature; and being further impatient of vicissitudes and dryness, they will not pass beyond the influence of those S.W. winds which drench all parts of western South America, alpine and lowland, south of the parallel of 37°.



One of the few attractions of spring in Antarctic America, is the bursting of the leaf and flower buds of the deciduous-leaved Beech from their resinous gummy scales; when a delightfully fragrant odour pervades the woods. The unfolding of the plaited foliage was watched with great interest, for we had not witnessed for years any process so closely resembling that of an English spring. It recalled Linnæus' enthusiastic description of the first burst of the birch leaf in Lapland.

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best in the island, for ground-frames of houses, planks for vessels, and beams. The piraguas are built chiefly of this wood. There are two sorts, one an evergreen, and the other a deciduous-leaved tree. It is evidently a Beech, and the same that grows in all parts of the Strait of Magalhaens; the smooth-leaved sort is *F. obliqua*, Mirb." Capt. King attaches the name of "Roble" to his specimen of *F. Dombeyi*.

Fitch. del et lith.

Reeve imp.

Fagus betuloides: Mirb

PLATE CXXII. *Fig.* 1, male flower; *fig.* 2, involucre and female flower; *fig.* 3, transverse section of ditto, more advanced; *fig.* 4, ripe achrenium; *fig.* 5, the same; *fig.* 6, involucre after the achænia have fallen away:—all *magnified*.

2. FAGUS *obliqua*, Mirb., *Mém. Mus. Hist. Nat.* vol. xiv. p. 465. t. 4. *Hook. Bot. Journ.* vol. ii. p. 153.

HAB. Strait of Magalhaens; Port Famine, *Capt. King*.

This I take to be the third kind of Beech alluded to by Capt. King as a native of Port Famine, in his collections, however, no specimen of the present species occurs. It is distinguishable from the former chiefly by the larger, narrower, rhomboidal, more acute leaves.

3. FAGUS *Pumilio*, Poepp. et Endlicher, *Nov. Gen. et Sp. Plant. Per. et Chili*, vol. ii. p. 68. t. 195. *Hook. in Journ. Bot.* vol. ii. p. 154. Calusparassus Pumilio (?), *Homb. et Jacq. in Voy. au Pole Sud, Bot. Dicot.* t. 8. ♀.

HAB. Strait of Magalhaens; Port Famine (?), *Capt. King*.

I have alluded to this Beech (under *F. Antarctica*) as perhaps only a state of that plant, differing in the leaves being pubescent on both surfaces and more closely and deeply serrated. The figure of Poeppig and Endlicher is excellent; that of MM. Hombron and Jacquinot, in the 'Voy. au Pole Sud', represents a narrower and smaller-leaved, perhaps, alpine state; or more probably a different species, those authors having included it in their not yet described genus *Calusparassus*. Judging from their figures of other Antarctic *Fagi*, also called *Calusparassi*, the genus appears to include only those evergreen species of which the leaves are not plicate in vernation, which those of the *F. Pumilio* decidedly are, both in our specimens and those described and figured by Poeppig.

The latter author states this to be a short prostrate tree, eight and twelve feet long, with a mode of growth not unlike that of *Pinus Pumilio*. It marks (in Chili) the transition zone, from the erect trees, whose superior limit is indicated by the *F. alpina*, to the frigid region, where snow lies for eight months of the year, and where the shrubby *Compositæ*, and the Violets that grow in dense capitate tufts, and other handsome plants, abound.

I have marked the habitat assigned to Capt. King's specimen with a query, the label attached to it bearing "Cape Fairweather", where it is exceedingly improbable that any *Fagus* should exist.

3. FAGUS *betuloides*, Mirb., *Mém. du Mus.* vol. xiv. p. 465. t. 4. *Hook. Journ. Bot.* vol. ii. p. 153. F. dubia, *Mirb. et Hook. l. c.* F. Forsteri, *Hook. l. c.* p. 156. t. viii. Calusparassus Forsteri, *Homb. et Jacq. in Voy. au Pole Sud, Bot. Monocot. Phan.* t. 6. 2. C. betuloides, *Homb. et Jacq. l. c. Bot. Dicot.* t. 7. f. r. Betula Antarctica, *Forst. Comm. Goett.* vol. ix. p. 45. *Willd. Sp. Pl.* vol. iv. p. 466. *Banks et Sol. in Bibl. Banks. cum icone*. (TAB. CXXIV.)

HAB. South Chili to Cape Horn, very abundant; *Commerson, Banks and Solander, Forster*, and all succeeding voyagers.

The synonyms above enumerated certainly all belong to one species, the common Evergreen Beech of Fuegia, and I incline to add the *F. alpina*, Poepp. and Endlicher, as stated at p. 347.

PLATE CXXIV. *Fig.* 1, male flower; *fig.* 2, involucre with female flowers; *fig.* 3 and 4, female flowers removed from ditto; *fig.* 5 and 6, longitudinal sections of the same, showing the ovules; *fig.* 7, involucre, after the achænia have fallen away:—all *magnified*.

XLIX. CONIFERÆ, *Juss.*

1. THUJA, *Tourn.*

1. Thuja *tetragona*, Hook., *in Lond. Journ. of Bot.* vol. iii. p. 144. t. 4.

Hab. South Chili and Strait of Magalhaens; Port Famine, *Capt. King.*

This species has been described, on the authority of Mr. Bridges, as the true "Alerse" of Chili. Upon showing my specimens, however, to M. Claude Gay, the celebrated Chilian traveller, he assured me that the "Alerse" was a totally different plant, and not a *Thuja* at all; a statement the more probable, from Capt. King's description of the Alerse leaves, which, he says, resemble those of a Pine in colour, but are only half an inch long; though the difference may arise from the young and old states of this, as of other *Coniferæ*, often bearing leaves of a very different appearance. When enumerating the woods in use in the Island of Chiloe, Capt. King mentions in one place (p. 281) the "Alerse" and "Cypress", which are thus usually considered as different plants, and says that the "Cypress" is brought to that Island in "tablones" (or planks), seven or eight feet long, two inches thick, and nine or twelve inches wide, as is also the "Alerse"; but the latter, from the facility in which it splits, is brought in boards also. The same voyager observes (p. 183) that, though the "Cypress" is thought to be a different tree from the "Alerse", he considers it only a variety, the wood being white, whilst that of the "Alerse" is deep red. Naturalists who are aware how uncertain are the limits of the acknowledged species and varieties of European *Coniferæ*, will readily appreciate the difficulty that attends the determination of those of an opposite hemisphere, only known to us through insufficient specimens, vague reports, and incorrect information. Capt. King evidently believes the "Cypress" and "Alerse" to be identical, for he affirms that the former grows commonly in the Strait of Magalhaens, in all parts west of Cape Forward, but that there, from the poverty of the soil, the wood is of very stunted growth (p. 283); and this description tallies with the specimens of *Thuja tetragona* in his Herbarium.

Thuja tetragona is apparently a rare Magellanic plant. Capt. King says it is found on the north shore of the Strait between Cape Forward and Port Gallant, but not to the eastward, except on the sides of Mount Tarn, where it only reaches the height of three or four feet (King's Voy. p. 131). The same author elsewhere states that the natives make their spears of its wood (p. 568). In Hermite Island where the *Thuja* does not exist *Drimys Winteri* is used for that purpose.

L. ORCHIDEÆ, *Juss.*

1. CHLORÆA, *Lindl.*

1. Chloræa *Gaudichaudii*, Brongn., *in Duperrey Voy. Bot.* p. 189. t. 44. A. *Lindl. Gen. et Sp. Orchid.* p. 405. Arethusa lutea, *Gaud. in Ann. Sc. Nat.* vol. v. p. 101, *et in Freyc. Voy. Bot.* t. 133. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 604. "Satyrion," *Pernetty, Voy.* vol. ii. p. 54. t. 8. f. 5.

Hab. Falkland Islands, *Gaudichaud, D'Urville, Mr. Wright, J. D. H.*

Not uncommon in moist pastures of the Falkland Islands, varying a good deal in size and in the breadth of its leaves. It differs from the *C. alpina*, Poepp., of South Chili, by the flowers being very much smaller, and the sepals, petals, and labellum differently formed. Both the figure and description of Brongniart, are very good.

2. Chloræa *Magellanica*, Hook. fil.; labello ovato-cordato obsolete trilobo breviter unguiculato marginibus inflexis glandulis grossis elongatis stipitatis cristato axi sub-lamellato, lobis lateralibus sub-laceris

Fitch del et lith.

Codonorchis Lessonii Lindl.

Reeve imp.

intermedio producto spice subdilatato obtuso incrassato nudiusculo, sepalis lateralibus linearibus ultra medium incrassatis apice obtusis carnosis marginibus inflexis, petalis ovatis obtusis sepalis ½ brevioribus, spica triflora, scapo foliato.

HAB. Strait of Magalhaens; Elizabeth Island, *C. Darwin, Esq.*

Planta 1–1½ pedalis. *Folia* basi longe vaginantia; lamina ovato-lanceolata, sub-recurva. *Bracteæ* ovato-lanceolatæ, acuminatæ, membranaceæ, concavæ. *Flores* erecti, majusculi, speciosi. *Sepala* oblongo-lanceolata, omnino nuda, superiore obtuso, lateralibus linearibus, supra medium sicitate nigrescentibus, omnia petalaque venosa et transversim venulosa. *Labellum* coriaceum, recurvum, marginibus involutis, petalis æquilongum *Columna* petalis paulo brevior, arcuata.

A perfectly distinct and very handsome species, confined in its habitat to that eastern portion of the Straits of Magalhaens, where, as Mr. Darwin remarks, the Floras of Fuegia and Patagonia are blended.

2. ASARCA, *Poepp.*

1. ASARCA *Commersonii*, Lindley, *Gen. et Sp. Orchid.* p. 405, *sub* Chlorsea.

HAB. Strait of Magalhaens, *Commerson*; Falkland Islands (Western Island?); *Mr. Wright, Mr. Chartres.*

Brongniart's description and figure are very characteristic of the Falkland Island specimens of this plant, which is quite distinct from the following. I have seen no Magellanic or Fuegian individuals, Capt. King's Port Famine *Chlorææ* or *Asarca* being a totally different species. Mr. Wright and Mr. Chartres having gathered it in the Western of the two Falkland Islands, and no other collectors having met with it in the Eastern, I am inclined to consider this plant as one of the Fuegian species which has not spread to the eastern parts of the group, as is the case with the *Veronica elliptica*.

2. ASARCA *odoratissima*, Poepp., *Nov. Gen. et Sp. Plant. Per. et Chil.* vol. ii. p. 13. t. 118. *Lindley, Gen. et Sp. Orchid.* p. 407.

HAB. Falkland Islands (Western Island?), *Mr. Wright.*

Mr. Wright's specimen of a spike of this plant, preserved in spirits, entirely accords with the figure of Poeppig.

3. ASARCA (?) *Kingii*, Hook. fil.; labello breviter unguiculato oblongo obtuso indiviso integerrimo nudo membranaceo nervis mediis vix incrassatis, sepalis lateralibus lanceolatis acuminatis apicibus simplicibus. petalis oblongo-obovatis obtusis sepalis labelloque paulo brevioribus, spica 6–8-flora.

HAB. Strait of Magalhaens; woods of Port Famine, *Capt. King.*

Herba pedalis. *Folia* radicalia 6-uncialis, lanceolata, acuminata. *Scapus* foliatus. *Spica* 2–4 unc. longa. *Bracteæ* ovato-lanceolatæ, acuminatæ, membranaceæ, concavæ. *Flores* pro genere parvi, flavi. *Sepala* vix ½ unc. longa, membranacea, venosa, lanceolata, lateralibus basi angustioribus. *Petala* sepalis paulo breviora. *Labellum* sepalis æquilongum, omnino indivisum. *Columna* brevissima.

The short column has induced me to refer this very distinct plant to the genus *Asarca*, for in a dried state it is almost impossible to determine whether the petals are patent or conniving.

3. CODONORCHIS, *Lindl.*

1. CODONORCHIS *Lessonii*, Lindl., *Gen. et Sp. Orchid.* p. 411. C. Poeppigii, *Lindl. l. c.* Calopogon Lessonii, *Brongn. in Duperrey Voy. Bot.* p. 188. t. 37. f. 1. Pogonia tetraphylla, *Poepp. et Endl. Nov. Gen. &c.* vol. ii. p. 16. t. 122. Epipactis Lessonii, *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 605. (TAB. CXXV.)

Hab. Strait of Magalhaens, and throughout Fuegia, *Commerson, Banks and Solander*, and all succeeding voyagers. Falkland Islands, *D'Urville, &c.*

The leaves of this plant vary from two to four, three being the prevailing number. The flowers, also, are very much larger in some specimens than others, and dissimilar in colour and spotting. Poeppig's *Pogonia tetraphylla*, from South Chili, is decidedly only a state of *Codonorchis Lessonii*, the glands on the labellum affording no more constant character in this plant than in the beautiful *Chiloglottis* of Tasmania.

Plate CXXV. *Fig.* 1, ovarium, column, and labellum; *fig.* 2, labellum; *fig.* 3, column; *fig.* 4, anther-case; *fig.* 5, pollen-masses:—all *magnified*.

LI. IRIDEÆ, *Juss.*

1. SISYRINCHIUM, *Tourn.*

1. Sisyrinchium *filifolium*, Gaud.; caule simplici tereti strinto basi folioso, foliis radicalibus filiformibus scapum æquantibus brevioribusve, scapo ultra bracteas in spatham elongatam producto, fasciculis florum sessilibus rarius pedunculatis solitariis v. rarissime geminis bibracteatis 2–8-floris, perianthii segmentis subæqualibus albis purpureo-venosis. S. filifolium, *Gaud. in Ann. Sc. Nat.* vol. v. p. 101, *et in Freyc. Voy. Bot.* p. 133. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 604. S. Gaudichaudii, *Dietrich. Sp. Pl.* vol. ii. p. 505. (Tab. CXXVI.)

Hab. Strait of Magalhaens; Cape Gregory, *Capt. King*; Falkland Islands, *Gaudichaud*, and all succeeding voyagers.

Herba elegans, 4-unc. ad bipedalem. *Radix* e fibris plurimis horizontalibus carnosis. *Caulis* basi reliquiis fibrosis foliorum emortuorum obtectus. *Folia* pauca, pleraque radicalia, filiformia, scapo breviora v. elongata. *Scapus* gracilis, teres. *Spatha* 2–5-unc. longa, basi vaginans, superne in folium filiformem desinens. *Pedunculi* floriferi plerumque solitarii, rarius bini, brevissimi v. raro elongati, apice bracteas duas lanceolatas æquilongas unciales gerentes. *Pedicelli* filiformes, exserti, stricti v. flexuosi. *Flores* magnitudine varii, *Galanthi nivalis* æquantes v. dimidio terve minores, late campanulati, albi. *Perianthii* segmenta subæqualia, obovata, apiculata, membranacea, venis scapius flexuosis purpureis ornata. *Stamina* fere omnino libera, antheris versatilibus brevibus. *Stylus* apice incrassatus, trifidus, ramis divaricatis. *Capsula* membranacea-coriacea. *Semina* obovata, lævia; *testa* reticulata, brunnea.

One of the most abundant and elegant plants in the Falkland Islands, where the grassy plains are, in the spring month of November, almost whitened by the profusion of its pendulous snowy bells.

A very similar species, if not the same, seems to be common in Chili, from Valparaiso to Concepcion; but its flowers are smaller than in the majority of the Falkland Island specimens.

Plate CXXVI. *Fig.* 1, segment of the perianth; *fig.* 2, ovarium, stamens, style, and stigmata; *fig.* 3, transverse section of ovarium; *fig.* 4, ovule; *fig.* 5, ripe fruit; *fig.* 6, transverse section of the same; *fig.* 7, seed; *fig.* 8, the same, cut longitudinally:—all *magnified*.

2. Sisyrinchium *laxum*, Link., *in Hook. in Bot. Mag.* t. 2812.

Var. *major*; caule bifido foliisque latioribus, spatha bracteisque apices versus scaberulis, perianthii segmentis latioribus.

Var. *minor*; caule simplici foliisque angustioribus, spatha bracteisque glaberrimis, perianthii segmentis angustioribus.

Hab. Var. *major*, Chonos Archipelago, *C. Darwin, Esq.* Var. *β*, Strait of Magalhaens; Port Famine. *Capt. King*; Cape Negro, *C. Darwin, Esq.*

Bah. del. et lith.

Sisyrinchium filifolium, Gaud.

Reeve, imp.

A species which has been erroneously included by Sprengel in the terete stemmed group, and even considered by Lindley and Dietrich to be synonymous with *S. iridifolium*, Kunth, (*Marica iridifolia*, Bot. Reg. t. 646). Such may be the case, but I have seen no specimens decidedly connecting these two species, and therefore hesitate before adopting a conclusion which would give this plant a geographical range from the equator to the Strait of Magalhaens. Still, the var. *major* is so decidedly scabrulous, so much larger, and so much more resembling the *S. iridifolium* than the var. *minor*, that there is nothing improbable in the supposition that both are varieties of one tropical species. *S. laxum* is also a native of Valparaiso.

3. SISYRINCHIUM (?) sp.

HAB. Strait of Magalhaens; *Capt. King*.

A curious plant, unfortunately too imperfect for description, but with very much the habit, foliage, and fruit of a *Sisyrinchium*. Root consisting of elongated fleshy fibres, 3–4 inches long. Rhizoma very short, fibrous, giving off at its apex a terete scape and short leafy stem. *Leaves* about three, with scarious sheaths at the base, filiform, terete, six or seven inches long. *Scape* shorter than the leaves, furnished at the middle with two leaf-like opposite bracteæ sheathing at the base. *Peduncle* solitary, one-flowered, shorter than the bracteæ, erect. *Fruit* immature, globose, trigonous (?), the size of a small pea, three-locular (?), each cell containing several seeds on parietal (?) placentæ.

The above diagnosis may serve to distinguish this curious plant, which differs chiefly from *Sisyrinchium* in the scape not springing from between the uppermost leaves, but from the base of the outer one, and in there being no spatha to any of the specimens; though the scape in one instance bears the scar of a fallen leaf, half-way between the insertion of the bracteæ and the rhizoma.

2. SYMPHYOSTEMON, *Miers*.

1. SYMPHYOSTEMON *narcissoides*, Miers, *in Linn. Soc. Trans.* v. xix. p. 97. Sisyrinchium narcissoides, Cav., *Diss.* vol. vi. p. 347. t. 191. f. 3. S. odoratissimum, *Lindl. Bot. Reg.* t. 1283. Galaxia narcissoides, *Willd. Sp. Pl.* vol. iii. p. 583. Gladiolus biflorus, *Thunberg, Diss. Glad.* n. 5.

HAB. Strait of Magalhaens, *Commerson*; Port Famine, *Capt. King*; Elizabeth Island, *C. Darwin, Esq.*

I quite agree with Mr. Miers in removing this plant from *Sisyrinchium*. Thunberg's habitat of the Strait of Magalhaens, from whence he originally described this plant as *Gladiolus biflorus*, has been replaced by that of the Cape in most succeeding authors, except Vahl (En. Plant. vol. ii. p. 97), and Willdenow (Sp. Pl. vol. i. p. 209).

3. TAPEINIA, *Juss.*

Perigonium corollinum, superum, hexaphyllo-partitum; laciniis basi connatis, subcarnosis, patentibus, apiculatis, 3 exterioribus majoribus, *Stamina* 3, imo perigonii inserta; *filamentis* in tubum trigonum connatis, supra medium liberis; *antheris* extrorsis, lineari-ovatis, basi profunde emarginatis. *Ovarium* lineari-obovatum, 3-loculare. *Ovula* plurima, basi anguli centralis loculi affixa. *Stylus* validus, supra medium in stigmata 3 erecta subulata apice dilatata papillosa fissus. *Capsula coriacea*, globosa, trilobo, trilocularis, apice loculicido-trivalvis. *Semina* plurima, obovata, teretia; *testa* subcoriacea, grosse cellulosa; *rhaphe* indistincta; *chalaza* atra; *embryo* parvus, elongato-obconicus, basi albuminis duri immersus.—Tapeinia, *Juss. Gen.* p. 59, *e schedis* Commersonii.

1. TAPEINIA *Magellanica*, Juss., *l. c.* Witsenia pumila, *Vahl, Enum.* vol. ii. p. 48. *Rem. et Sch. Syst. Veg.* vol. i. p. 371. *Spreng. Syst. Veg.* vol. i. p. 147. *Dietrich. Sp. Pl.* vol. ii. p. 559. W. Magel-

lanica, *Pers. Synops.* vol. i. p. 42. Ixia pumila, *Forst. Comm. Goett.* vol. ix. p. 20. t. 8. I. Magellanica, *Lam. Ill.* vol. i. p. 109. Moræa Magellanica, *Willd. Sp. Pl.* vol. i. p. 241. Galaxia obscura, *Cav. Diss.* vol. vi. p. 341. t. 189. f. 4. (Sisyrinchium pumilum, Tab. CXXIX.)

Hab. Strait of Magalhaens and throughout Fuegia, on the mountains, *Commerson, Banks and Solander*, and all succeeding voyagers.

The accompanying plate and analysis of this curious little plant represent all its characters, and especially those which have induced me to retain the genus which the illustrious Jussieu formed, but which has not been adopted by any succeeding author. It is to be distinguished from *Sisyrinchium* by its very remarkable habit, coriaceous perianth, and, more especially, by the capsule dehiscing at the apex, and the ovules and seeds occupying only the lower half of each placentiferous dissepiment. To the southward of the Strait of Magalhaens, where *Sisyrinchia* do not extend, this little plant represents that genus, and is also the analogue of the *Libertiæ* of New Zealand.

The curious and beautiful distichous arrangement of the foliage, is characteristic of this and of some other especially alpine Antarctic plants, belonging to several natural orders, amongst the majority of the species of which such a foliation is foreign or very rare. Thus, in *Cyperaceæ* it is seen in *Oreobolus pectinatus* (pt. 1. t. 49); amongst *Restiaceæ*, in *Gaimardia pallida* (p. 86); amongst *Ahismaceæ*, in *Tetroncium Magellanicum* (t. 128); and amongst *Juncæ*, in the Peruvian *Distichya muscoides*, Nees and Meyen (Nov. Act. Acad. Cæs. vol. xix. Suppl. p. 77), which is probably the *Goudotia Tolimensis*, Decaisne (Ann. Sc. Nat. scr. 3. vol. iv. p. 83. t. 4). This tendency to assume a certain habit, which these otherwise wholly dissimilar plants present, is perfectly analogous to what occurs even more conspicuously in the vegetation of the Cape of Good Hope and Australia; and one of the most singular phenomena of the vegetable kingdom.

Plate CXXIX. *Fig.* 1, bracteæ and flower; *fig.* 2, expanded flower; *fig.* 3, stamens, styles and stigmata; *fig.* 4, ripe capsule; *fig.* 5, the same burst open; *fig.* 6, one valve of the same, showing the insertion of the seeds; *fig.* 7, a seed removed; *fig.* 8, vertical section of the same; *fig.* 9, embryo (the figures 8 and 9 are inadvertently transposed):—*magnified*.

LII. SMILACEÆ, *Br.*

1. CALLIXENE, *Comm.*

1. Callixene *marginata*, Commerson, *ex Juss. Gen.* n. 41. *Lam. Illust. Gen.* t. 248. *Gaud. in Ann. Sc. Nat.* vol. v. p. 101. t. 2. f. 2, *et in Freyc. Voy. Bot.* p. 133. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 604. Enargea marginata, *Banks et Sol. MSS. in Bibl. Banks. cum icone, et in Gertner de Fruct.* vol. i. p. 283. t. 59. f. 3.

Hab. Strait of Magalhaens and throughout Fuegia, *Commerson, Banks and Solander, &c.* Falkland Islands, most abundant, *Gaudichaud*, and all succeeding voyagers.

A very elegant little plant, remarkable, especially in the Falkland Islands, for its very sweet-scented flowers.

The extrorse anthers of this genus have been hitherto overlooked, from the versatile nature of their attachment. The embryo, described as amphitropal, at first is nearly atropal; but apparently during the maturation of the ovarium the seed becomes partially inverted, so as to be placed at right angles with the funiculus, and the embryo is consequently heterotropal.

Callixene is an Antarctic-American, and New Zealand genus. From the latter country Mr. Colenso has sent the *C. parviflora*, Hook. fil. (Hook. Ic. Plant. t. 632), which grows at the foot of large Beech trees, lying prostrate

Fitch del et lith.

Reeve imp.

Sisyrinchium pumilum. Hook fil.

against their trunks in the mountain forests, as the *C. marginata* does at Cape Horn. Their Australian representative is the *Drymophila cyanocarpa*, Br., a subalpine Tasmanian plant, very similar to them in habit.

2. CALLIXENE *polyphylla*, Hook. *Ic. Plant.* t. 674.

HAB. Cape Tres Montes, *C. Darwin, Esq.*

The *C. marginata* does not attain a lower latitude in South America than the Strait of Magalhaens, but is replaced in South Chili by the present species, which is much handsomer; this, again, is represented in Peru by the genus *Luzuriaga* of Ruiz and Pavon.

2. PHILESIA, *Comm.*

Flores hermaphroditi. *Perigonium* corollinum, campanulatum, sexpartitum, laciniæ exteriores interioribus multoties breviores. *Stamina* 6, imo perigonii inserta; *filamenta* filiformia, infra medium in tubum connata; *antheræ* inclusæ, lineares, extrorsæ. *Ovarium* parvum, unioculare. *Ovula* plurima, sub-biseriatia, orthotropa, funiculis brevibus, placentis parietalibus elongatis adnexa. *Stylus* elongatus, simplex. *Stigma* exsertum, capitatum, plumosum, obscure 3-lobum. *Bacca* unilocularis, polysperma. *Semina* pulpo glutinoso nidulantia, ascendentia, ovoidea, rugosa; *testa* tenuis, flavida; *albumen* corneum; *embryo* cavitate axili albuminis lente arcuatus, extremitate cotyledonari hilo oppositus.—Suffrutex Chilensis *suberectus*. Rami *teretes, stricti v. flexuosi*. Folia *alterna, coriacea*. Pedunculi *ramis terminales*. Flores *magni, speciosi, basi bracteati*. Philesia, *Commerson, ex Juss. Gen.* p. 41.

1. PHILESIA *buxifolia*, Lam., *Illust. Gen.* t. 248. *Poiret, Encycl.* vol. v. p. 269. *Rem. et Sch.* vol. vii. p. 314. *Lindl. Veg. Kingd.* p. 217.

HAB. Strait of Magalhaens, *Commerson*; Port Famine, *Capt. King*; Good Success Bay, *Banks and Solander*.

Except by the parietal placentation, the genera *Philesia* and *Lapageria* (themselves very closely allied), differ in no important points from *Callixene* and *Luzuriaga*, and since placentation does not afford characters of the importance amongst Monocotyledonous that it does in Dicotyledonous Orders, I see no objection whatever to arranging these two genera under *Smilaceæ* proper and next to *Callixene*.

In *Asteliaceæ*, as I have mentioned elsewhere, the placentæ are axile, parietal or pendulous; in *Juncæ*, parietal or basal; in *Amaryllideæ*, axile or parietal; in *Iliaceæ*, the same; and other orders equally display a very considerable amount of variation in the consolidation of the carpels, and consequent disposition of the placentæ, unaccompanied, however, with any other characters of more than generic value.

In all other respects, *Philesia* is even generically very nearly related indeed to *Callixene*, through *Luzuriaga*, which has the three inner segments of the perianth still larger in proportion than in *Callixene*; and on the other hand, through *Lapageria*, in which they are all equal in size. The habit, texture, distichous insertion of the leaves, which are all on the same plane with the ramuli; the texture, nervation, margination, and even form of the leaves, which are glaucous beneath, are alike in *Callixene* and *Philesia*; so are the terminal, large, solitary, bracteate flowers, the texture of the perianth, extrorse anthers, baccate fruit, the numerous ovules in two series on three rows of placentæ, the many ovoid seeds, delicate testa, dense albumen, and axile embryo which is of similar form in the two. The only difference in the ovules is, that those of the *Callixene* are heterotropal, those of *Philesia* nearly straight or atropal, characters rather indicating close affinity than the contrary.

With regard to the genus *Lapageria*, R. and P., it is so closely allied to *Philesia* that I doubt its validity, the chief differences being the nearly equally divided perianth of *Lapageria*, its more distinctly three-lobed stigma, oblong

berry, twining branches, and differently nerved leaves, in all which respects it is more evidently a genus of *Smilaceæ*, than either *Callixene* or *Philesia*. There is no reason for supposing Dombey's *Capia* to be other than *Lapageria rosea*.

It appears to me to be through these Antarctic and extra-tropical American genera, together with the *Callixene* of New Zealand and *Drymophila* of Tasmania, that the *Smilaceæ*, Lindl., are inseparably connected with the Tribe *Asparageæ*, Lindl., of *Liliaceæ*; groups which Dr. Lindley has placed in separate natural classes, on the ground chiefly of anatomical differences in their stems: and it further appears that all modifications of a stem typical of Endogens and one equally characteristic of Dictyogens may be traced amongst these plants.

My own observations on the wood of *Philesia* do not exactly lead to the conclusions that the learned author of the 'Vegetable Kingdom' has formed; what appears to be bark is at no period separable from the subjacent wood, and the pith is of undefined form. There is a resemblance between the bark of *Philesia* and that of an exogenous stem, but it is apparent and not real: the stem consists of one mass of cellular tissue, through which bundles of vascular tissue descend, between the axis and the cuticle; abundantly towards the latter, where they all coalesce, though always at a little distance within the circumference; more sparingly towards the axis, where a space is often left wholly unoccupied with woody fibres. A transverse section of such a stem thus presents, 1st, a cuticle; 2nd, a zone of cellular tissue, often formed of thick walled cells; 3rd, a zone of wood, dense and defined externally, gradually laxer towards the axis and separating into bundles which irregularly surround a central column of pith. The only difference, in short, between this and any other Endogenous stem, consists in the first-formed or outer bundles being disposed more symmetrically, and being combined into one zone.

If a branch of *Luzuriaga radicans* be examined, the same peculiarity will be perceived, with only this difference, that the zone of wood is narrower and the pith broader. In *Callixene polyphylla*, the woody zone, though still continuous, is narrower still. In *C. parviflora* both its edges (both inner and outer circumference) are clearly defined; and in *C. marginata* it is sometimes interrupted.

The *Callixene marginata* thus shows this disposition of the outer vascular bundles to unite in the lowest degree of these South American *Smilaceæ*, but in *Lapageria* the same tendency will be found in its highest, for the stem of that plant is almost wholly composed of woody matter, concentrated externally into a well-defined zone, rather looser towards the centre, and enclosing large tracheæ with very little cellular tissue intermixed. Externally to the wood is a very narrow layer of condensed parenchyma. In the first year's twig of this plant, the cellular tissue is proportionably abundant, with separate vascular bundles scattered through it, but is absorbed or obliterated afterwards. Nor is it in the genera of South America alone that these woody bundles are thus arranged, it is so in the *Geitonoplesium* (*Luzuriaga cymosa*, Br.) of New Holland, and in *Drymophila*, Br.; and even nearer home in *Convallaria* and probably in many *Convallarieæ*. To the last mentioned group the above named genera most assuredly belong; whether the venation be parallel as in *Callixene*, parallel and retose between the costæ as in *Lapageria*, or wholly retose as that of *Philesia* appears to be, from the two lateral of the three parallel costæ forming the thickened margin of the leaf.

On the other hand, if we turn to the *Smilaceæ* proper, as limited by Dr. Lindley, even they display no more deviation from the common Endogenous structure than do the *Convallarieæ*. A young shoot of *Rhipogonum* shows the same disposition of the woody and cellular tissue as *Callixene polyphylla*, with rather a broader zone of cellular tissue surrounding the wood; but in an older stem of the same, the wood so predominates over the parenchyma, that the zone of cellular tissue is only distinguished with difficulty. In the *Smilax excelsa*, L., of Europe, the woody zone of the young branch is neither so continuous nor regular, but it becomes so in the older state of the plant. *Tamus communis* presents the same arrangement. In the young stem of *Testudinaria elephantipes* I do not find the medullary plates described by Dr. Lindley; there appears to me to be a broad and perfectly continuous zone of wood, sending six or eight prolongations towards the axis, where there are further a few irregularly disposed bundles. I shall conclude this long digression by instancing the genus *Juncus* as of the furthest removed from

Fitch del. et lith.

Astelia pumila. Br

Reeve imp

Dictyogens in every point of view, except that it possesses an equally continuous and defined zone of woody tissue, within the cuticle, separated from the latter by a zone of parenchyma, and enclosing a mass of pure pith.

The *Philesia buxifolia* is among the handsomest plants of the Antarctic American Flora; it occurs along the coast from the Strait of Magalhaens to Valdivia; to the northward of which, between Valdivia and Concepcion, it is replaced by the *Lapageria rosea*.

LIII. ASTELIEÆ, *Brongniart.*

1. ASTELIA, *Banks et Sol.*

1. ASTELIA *pumila*, Brown, *Prodr.* p. 291. *Gaud. in Ann. Sc. Nat.* vol. v. p. 100. *et in Freyc. Voy. Bot.* p. 132. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 603. *Fl. Antarct.* vol. i. p. 76. Melanthium pumilum, *Forst. Comm. Goett.* vol. ix. p. 30. t. 6. *Banks et Sol. MS. in Mus. Banks. cum icone.* Funkia Magellanica, *Willd. Mag. Naturf. Fr.* vol. ii. p. 19. (TAB. CXXVII).

HAB. South Chili, from the Chonos Archipelago to Cape Horn, very abundant on the hills and in exposed places, *Commerson*, and all future voyagers; Falkland Islands, *Gaudichaud*, *&c.*

Under the description of *A. linearis*, in the first part of this volume, I mentioned that the placentation varies in the different species of this genus. In the majority, the ovules are numerous and arranged in two lines upon parietal placentæ; in one the seeds are numerous and pendent from the summit of a one-celled berry, whose dissepiments have probably been absorbed; a third form presents a three-celled ovarium, with several ovules pendulous from the summit of each cell; a fourth has a three- to six-celled subcapsular fruit, with a few pendulous seeds in each cell; while the present plant offers a fifth modification, for its placentation is decidedly axile, and the ovules are arranged in two rows along the inner angle of each of the three cells. This arises from the perfect consolidation of the carpels in a young state, when the edges of each carpellary leaf are so inflected as to meet in the axis of the pistil, where a triangular longitudinal cavity is often left (see *fig.* 5 of Plate CXXVII.). At an early period the cavity of each capsule is not apparent, the ovules being imbedded in a cellular mass, which in this species retires from between and around the ripening seeds, leaving a distinct cavity as the fruit advances to maturity, but in some others remains, partly attached to the placentæ and seeds, as a mucilaginous or gummy mass. At no time is the fruit of this plant truly even sub-capsular, its walls are always fleshy, and no trace of dehiscence can be seen along the furrows of each carpel, from which the seeds escape by the decay of the pericarp.

I have followed M. Bronguiart in placing this genus by itself in a natural group, whose nearest affinities I have indicated in the first part of this work.

The *Astelia pumila* is a most abundant Fuegian and Falkland Island plant, forming, with the *Caltha appendiculata* especially, a large proportion of the peat in those countries. Its flowers are inconspicuous, and have a faintly sweet smell.

PLATE CXXVII. *Fig.* 1, three-flowered peduncle, bract and flower; *fig.* 2, flower removed; *fig.* 3, pollen; *fig.* 4, ovarium; *fig.* 5, transverse section of the same; *fig.* 6 and 7, ovules; *fig.* 8, ripe fruit; *fig.* 9, transverse section of ditto; *fig.* 10, ripe seed; *fig.* 11, the same with the outer osseous integument removed; *fig.* 12, the same, cut longitudinally; *fig.* 13, embryo:—all *magnified*.

LIV. JUNCEÆ, *DC.*

1. ROSTKOVIA, *Desv.*

1. ROSTKOVIA *grandiflora*, Hook. fil.; *in Fl. Antarct.* vol. i. p. 82. Marsippospermum calyculatum, *Desv. Bot. Journ.* vol. i. p. 330. M. grandiflorum, *Hook. Ic. Plant.* t. 533. Juncus grandiflorus, *Linn. fil.*

Suppl. p. 209. *Forst. Comm. Goett.* vol. ix. p. 27. t. 3. *Gaud. in Ann. Sc. Nat.* vol. v. p. 100, *et in Freyc. Voy. Bot.* p. 132. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 603.

Hab. Strait of Magalhaens and throughout Fuegia, *Commerson, Banks and Solander, &c.* Falkland Islands, very abundant, *Gaudichaud*, and all succeeding voyagers.

The miserable natives of Fuegia weave the stems of this rush into baskets, and in doing so seem to exhaust their cunning, for such baskets appeared to us to be the only article they possessed, exhibiting any attempt at such handy-craft as demands the slightest ingenuity, except, perhaps, the moveable heads of their sealing spears.

2. Rostkovia *Magellanica*, Hook. fil. *l. c.*

Hab. Strait of Magalhaens, *Commerson*; Hermite Island, Cape Horn, *J. D. H.*; Falkland Islands, very abundant, *Gaudichaud, &c.*

I am not aware of this species having been gathered in Fuegia since Commerson's time, except by myself; and though abundant in Hermite Island, it is probably scarce and alpine to the north of that locality, as it is also in Campbell's Island.

2. JUNCUS, *L.*

1. Juncus *scheuchzerioides*, Gaud.; *Fl. Antarct.* p. 79.

Hab. Strait of Magalhaens; Port Famine, *Capt. King*; Hermite Island, Cape Horn, *J. D. H.*; Falkland Islands, very abundant, *Gaudichaud, &c.*; Kerguelen's Land, *J. D. H.*

Decidedly the most Antarctic *Juncus*, and exceedingly abundant at Cape Horn, the Falkland Islands, and Kerguelen's Land, where no other species of the genus exists. It is also a native of Campbell's Island and Lord Auckland's group.

2. Juncus *planifolius*, Brown, *Prodr.* p. 259. *E. Meyer, Junci*, n. 36, *et in Linnæa*, vol. iii. p. 370. *La Harpe, in Mém. Soc. Nat. Hist. Paris*, vol. ii. p. 55. *Kunth, En. Plant.* vol. iii. p. 344.

Hab. Chonos Archipelago, *C. Darwin, Esq.*

These, and other specimens gathered at Valdivia by Mr. Bridges, are the only extra-Australian individuals of this species that I have seen. Meyer remarks (Herb. Hook.), that there is no specific difference between the specimens of the New and Old World.

3. Juncus *graminifolius*, E. Meyer, *in Rel. Hænk.* vol. ii. p. 144. Cephaloxys graminifolia, *Nees et Meyer, in Nov. Act. Acad. Cæs.* vol. xix. *Suppl.* p. 128. J. rivularis, *Poeppig, fid. Meyer in Herb. Hook.*

Hab. Chonos Archipelago, *C. Darwin, Esq.*

The present species, like the former, can scarcely be considered truly Antarctic, merely entering the northern limits which I have assigned to the Fuegian Flora. It ranges on the coast from Valparaiso to the latitude of Chonos Archipelago and is also found on the Cordillera of Peru.

Meyer (Hook. Herb.) remarks that this hardly belongs to the genus *Cephaloxys*, on account of the structure of its capsule.

3. LUZULA, *DC.*

1. Luzula *Alopecurus*, Desv. *Bot. Journ.* vol. i. p. 159. *E. Meyer, in Reliq. Hænk.* vol. ii. p. 145. *Syn. Luzul.* n. 5. *La Harpe, in Mém. Soc. Hist. Nat. Paris*, vol. ii. p. 177.

Tetroncium Magellanicum. Willd.

Hab. Strait of Magalhaens, *Commerson, Capt. King*; Falkland Islands, very abundant, *Gaudichaud, &c.*

I have seen but an imperfect specimen of the *L. Peruviana*, Desv., to which the present is manifestly very closely related. E. Meyer (Herb. Hook.) observes, that though so much alike in the young state, when older they are very distinct species. The present is the most Antarctic of the genus, except the following, and is the South American representative of the *L. crinita* (Tab. XLVIII.) of Lord Auckland's group.

2. Luzula sp. ?

Hab. Hermite Island, Cape Horn, on the tops of the mountains, alt. 1,600 feet, *J. D. H.*

My specimens are only sufficient to prove this plant to be a *Luzula*; they are scarcely two inches high, with a slender stem, and nodding small panicle; the whole somewhat resembling the *L. arcuata* of Arctic Europe, whose Antarctic representative it probably is.

LV. ALISMACEÆ, *Br.*

1. TETRONCIUM, *Willd.*

Flores dioici. Fl. Mas. *Perigonium* obliquum, tetraphyllum, coloratum, foliolis concavis inæqualibus, late ovatis, superioribus altius insertis, supremo majore. *Stamina* 4, foliorum perigonii basi inserta; *filamenta* brevissima; *antheræ* extrorsæ, late didymæ, basi fixæ. *Ovarii* rudimentum nullum. Fl. Fem. *Perigonium* ut in masc., sed foliolis angustioribus. *Stamina* 0. *Carpella* 4, subulata, basi in ovarium incomplete 4-loculare coalita, supra medium libera; *styli* subulati, divergentes, imo apice inconspicue stigmatiferi; *ovula* quovis loculo solitaria, erecta, anatropa, foramine late aperto. *Fructus* indehiscens, 4-locularis, monospermus. *Semen* erectum, lineari-oblongum, compressum; *testa* tenuissima; *albumen* farinaceum; *embryo* axilis, trigonus, longitudine albuminis, extremitate radiculari attenuata.—Herba Fuegiana *et* Falklandica *cæspitosa, perennis*. Caulis *basi radicans, squamis nitidis tectus, divisus*. Folia *plana, disticha, equitantia, lineari-ensiformia*. Scapus *terminalis, erectus*. Flores *spicati*. Perigonium *flavescens, rufo-fusco maculatum*. Stamina *antheris magnis*. Fructus *deflexus, abortu monospermus, 4-cornutus*. Tetroncium, *Willd.*

1. Tetroncium *Magellanicum*, Willd., *in Berl. Mag.* vol. ii. p. 17. *Hook. Ic. Plant.* t. 534. *Kunth. En. Plant.* vol. iii. p. 142. Triglochin reflexum, *Vahl, ined.* (*fid. Willd.*). T. Magellanicum, *Vahl, in Herb. Mus. Paris*. Cathanthes, *Rich. in Mém. Mus.* vol. i. p. 365.

Hab. Strait of Magalhaens, *Commerson*; Port Famine, *Capt. King*. Good Success Bay, *Banks* and *Solander, Forster*; Hermite Island, Cape Horn, *J. D. H.*; Falkland Island, *Mr. Wright, J. D. H.*

The arrangement of all parts of the flower are quaternary in the specimens of this curious plant that I have examined; in which respect it differs from the majority of, and in the albuminous seeds from all the order, *Alismaceæ*; without, however, shewing any further affinity with the *Naiadaceæ*, in which order Dr. Lindley has placed it.

The habit of *Tetroncium* is precisely that of *Narthecium*, but in most other points its alliance to *Triglochin* is evident, particularly in the spicate inflorescence, concave segments of the perianth, which are obliquely placed, the upper being larger and inserted above the rest; in the extrorse, nearly sessile anthers; the solitary, basal, anatropal ovules; and the erect seed, which, being albuminous, indicates an affinity with *Juncaceæ*.

Plate CXXVIII. *Fig.* 1, male flower; *fig.* 2, segment of perianth and stamen; *fig.* 3, female flower; *fig.* 4, carpel cut open; *fig.* 5, ovule; *fig.* 6, the same, with the primine partly removed; *fig.* 7, ripe fruit; *fig.* 8, transverse section of the same; *fig.* 9, the same, longitudinally divided; *fig.* 10, seed; *fig.* 11, embryo:—all *magnified*.

2. TRIGLOCHIN, *Linn.*

1. Triglochin *Monte-Videnſe*, Spreng., *Syſt. Veg.* vol. ii. p. 145. *Roem. et Sch. Syſt.* vol. vii. p. 1586. *Kunth, En. Plant.* vol. iii. p. 144. T. capense, *Thunb. Prodr.* p. 67. T. maritimum, *Dreyse, in Herb. Hook.* T. striatum, *Cham. et Schlecht. fil. Kunth, l. c.*

Hab. Cape Tres Montes, *C. Darwin, Esq.*

Variat magnitudine, scapoque foliis nunc longiore nunc multoties breviore.

Probably a very widely diffused, and certainly in size a variable plant, common to both coasts of extra-tropical South America, and to the Cape of Good Hope. To this may also belong the *T. Chilense*, of Meyer, of which a wholly insufficient character is given in a foot-note to that traveller's journey (Reise un die Erde. vol. i. p. 354). Its nearest ally is the *T. decipiens*, Br., of Australia, of which *T. filifolium*, Sieb. (inaccurately described as wanting the abortive carpels), is a synonym; indeed, the Australian differs from the South American plant only in the larger fruit, so far as my only specimen enables me to judge.

LVI. RESTIACEÆ, *Br.*

1. GAIMARDIA, *Gaud.*

1. Gaimardia *australis*, Gaud., *in Ann. Sc. Nat.* vol. v. p. 100, *et in Freyc. Voy. Bot.* p. 419. t. 8. *Kunth, En. Plant.* vol. iii. p. 491.

Hab. Fuegia; Hermite Island, Cape Horn, *J. D. H.*; Falkland Islands, very abundant, *Gaudichaud, D'Urville, J. D. H.*

A particularly abundant plant on the hills of the Falkland Islands, forming, in boggy places, hard, extensive green patches, often several yards across, and contributing materially to the formation of peat-bog. It has representatives on Lord Auckland's Group and probably likewise in Tasmania.

LVII. CYPERACEÆ, *DC.*

1. OREOBOLUS, *Br.*

1. Oreobolus *obtusangulus*, Gaud., *in Ann. Sc. Nat.* vol. v. p. 99. t. 2. f. 1, *et in Freyc. Voy. Bot.* p. 417. *Kunth, En. Plant.* vol. ii. p. 367.

Hab. Fuegia; Hermite Island, Cape Horn, *J. D. H.*; Falkland Islands, abundant, *Gaudichaud, D'Urville, J. D. H.*

It is difficult to suppose that a plant, so abundant in the Falkland Islands, should be rare on the mountains of the adjacent continent, where, however, it has only been gathered near Cape Horn, unless a species collected by M. Goudot full 4,000 miles further north, on the peak of Tolima in Colombia, should prove to be the same plant, as, judging from a barren specimen, it very likely may.

2. ELEOCHARIS, *Br.*

1. Eleocharis *palustris*, Br., *Prodr.* p. 244. *Engl. Bot.* t. 181. Scirpus melanostachys, *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 608. Fimbristylis melanostachys, *Brong. in Duperrey, Voy. Bot.* p. 181.

Hab. Falkland Islands, *D'Urville, J. D. H.*

1

2

Fitch, del. et lith.

Reeve, imp.

Chætospora Antarctica., Hook. fil.

Evidently the European *E. palustris*, which is also a native of Patagonia, and very widely diffused throughout the temperate regions of both the northern and southern hemispheres. Hypogynous setæ are generally present, though those of my specimens vary in size; Kunth says, "setæ plane abortientes in *Scirpo melanostachyo*," and D'Urville and Brongniart have, from their occasional absence, included this species in *Fimbristylis*.

3. ISOLEPIS, *Br.*

1. Isolepis *pygmæa*, Kunth, *En. Plant.* vol. ii. p. 191.

Var. *brevis*. Isolepis brevis, *Brong. in Duperrey, Voy. Bot.* p. 180. I. Magellanica, *Gaud. in Duperrey, Voy. Bot.* p. 414. I. Meyeniana, *Nees, in Nov. Act. Acad. Cæs.* vol. xix. *Suppl.* p. 87.

Var. *elongata*. I. pygmæa, var. β, *Kunth, l. c.* I. trigona, *Kunze, in Poeppig, Coll.* n. 1. p. 27 (?).

Hab. Var. *brevis*, Falkland Islands, *D'Urville, J. D. H.* Var. *elongata*, Cape Tres Montes, *C. Darwin, Esq.*

The variations in the size, form, and markings on the surface of the achænia of the otherwise almost identical forms of *Isolepis* seem really endless. Falkland Island specimens are short, with small spikes, and small fuscous achænia, which are broader than long and punctulate, but the puncta not in parallel lines. Mr. Darwin's plant is much longer, and has rather longer spikes, with elliptical ovate larger achænia, which are longer than broad and similarly punctulate, its culms are often ten inches long. The *I. lepida*, Nees (in Linnæa, vol. iv. p. 291), judging by Cuming's Valparaiso specimens (in Herb. Hook.), resembles the plant of Mr. Darwin, its achænia are precisely similar to those of the Falkland Island variety in form, colour and surface, but scarcely half as large.

The Cape of Good Hope *I. pygmæa*, so called by Kunth, has the achænium of *I. lepida*, but pale coloured and smaller still; while the Auckland Island *I. Aucklandica* (p. 88. t. L) has larger fruit than any.

All of the above differ from the European *I. Savii*, Seb. and Maur., in the achænia not being so deeply punctate or striate. In size and form the pericarp of *I. Savii* resembles that of the Falkland Island plant.

4. CHÆTOSPORA, *Br.*

1. Chætospora *Antarctica*, Hook. fil.; culmis dense cæspitosis teretibus basi foliosis, foliis culmum vix æquantibus anguste lineari-elongatis rigidis semiteretibus super canaliculatis glaberrimis, spiculis sub 6 in paniculam brevem coarctatam involucro 5-phyllo breviorem aggregatis 1-floris, squamis distichis carinatis imberbibus, setis hypogynis 6 capillaribus nucem superantibus. (Tab CXLVII.)

Hab. Cape Tres Montes; Patch Cove, alt. 2,000 feet, *C. Darwin, Esq.*

Radix e fibris crassis descendentibus. *Rhizoma* breve, inclinatum. *Culmi* dense cæspitosi, rigidi, erecti. *Folia* 6-pollicaria, basi in vaginam castaneam chartaceam 1 unc. longam dilatata; lamina vix ⅓ lin. lata, apice acuminata. *Panicula* sub 1 unc. longa, coarctata, involucro basi vaginante ½ brevior. *Spiculæ* erectæ, pedicellatæ, inferiores involucratæ, ½ unc. longæ, lineari-oblongæ, uniflores. *Squamæ* sub 5, pallide flavo-fuscæ, nitidæ, lineari-oblongæ, acuminatæ, dorso carinatæ, inferiores supremaque vacuæ. *Stamina* 3. *Setæ* hypogynæ 6, squamis breviores, graciles, scaberulæ. *Nux* elliptico-oblonga, angulis costatis, glaberrima, polita, pallide fusca. *Stylus* gracilis, elongatus, apice stigmataque filiformia exserta.

Plate CXLVII. *Fig.* 1, spikelet; *fig.* 2, flower with the anthers fallen away:—both *magnified*.

2. Chætospora *laxa*, Hook. fil.; culmis dense cæspitosis teretibus basi foliosis, foliis culmo brevioribus anguste lineari-elongatis rigidis semiteretibus super canaliculatis glaberrimis, spiculis plurimis in paniculam

laxam subeffusam involucratam involucris breviorem dispositis 2-floris, squamis distichis carinatis exterioribus dorso scaberulis, setis hypogynis 4–6 rigidis scabridis nuce ¼ longioribus. (Tab. CXLVI.)

Hab. South Chili; Cape Tres Montes, *C. Darwin, Esq.*

Culmi pedales. *Folia* ut in priore sed duplo longiora. *Panicula* 2–3 unc. longa, parce ramosa. *Involucri* foliola 2 cæteris longiora, paniculam superantia. *Spiculæ* ¼ unc. longæ, ovato-oblongæ, compressæ, bifloræ, inferiores longius et graciliter pedicellatæ. *Squamæ* sub 6, atro-castaneæ, concavæ, ovatæ, acutæ v. sub-acuminatæ, nitidæ, inferiores vacuæ. *Stamina* 3. *Setæ hypogynæ* 4–6, rigidæ, scabridæ. *Nux* breviter stipitata, late elliptica, angulis costatis, stylo elongato stigmatibus 3 capillaribus exsertis terminato.

One of these two species of *Chætospora* may be considered the Antarctic representative of the *Schœnus nigricans* of Europe. Neither of them appears to inhabit a high south latitude, though the *C. Antarctica*, ascending to an elevation of 2,000 feet in South Chili, might have been expected to grow at the level of the sea in Fuegia.

Plate CXLVI. *Fig.* 1, spikelet; *fig.* 2, the same with the lower scales removed; *fig.* 3, achœnium:—all *magnified*.

5. CARPHA, *Banks et Sol.*

1. Carpha *schœnoides*, Banks et Sol. MS.; culmis cæspitosis teretibus lævibus, foliis breviusculis culmo ¼ brevioribus semiteretibus, spiculis sub 2-floris in paniculam pauciflorum involucratum dispositis, setis hypogynis 6 ad apicem plumosis. C. schœnoides, *Banks et Sol. MS. in Bibl. Banks. cum icone.* (Tab. CXLVIII.)

Hab. Southern parts of Tierra del Fuego; Good Success Bay, *Banks and Solander*; Hermite Island, Cape Horn, *J. D. H.*

Culmi 6–8-unciales, cæspitosi, basi foliati, radices plurimas fibrosas crassas demittentes. *Folia* plurima, basi vaginantia, lævia, vaginis pallidis, lamina lineari-subulata, acuta, semiterete, super anguste canaliculata. *Panicula* involucro ¼ brevior. *Spiculæ* sub 3, pedicellatæ, pedicello compresso infra squamas ancipiti. *Squamæ* sub 5, ¼ unc. longæ, lineari-oblongæ, acuminatæ, 2 inferiores vacuæ, dorso carinatæ, carina obscure scaberula, superiores dorso convexæ, floriferæ, supremo minore vacuo. *Setæ hypogynæ* 6, planæ, lineares, utrinque ciliato-plumosæ, longitudine squamas æquantes, basi in tubum brevem cyathiformem connatæ. *Stamina* 3, fauce tubi perigonii insertæ. *Nux* obovato-oblonga, stipitata, 3-costata angulis incrassatis, stylo coronata. *Stylus* persistens, trigonus, angulis serratis, infernc attenuatus, apice acuminatus, validus, rigidus. *Semen* solitarium, erectum, nuci conforme; raphe et chalaza prominentes; embryo parvus, octohædrus, basi albumine inclusus, extremitate cotyledonari attenuata.

The *Carpha schœnoides* of the hills of Fuegia, and the *C. alpina*, Br., of the loftier mountains of Tasmania, are two closely-allied representative species, both apparently very rare and local plants. *C. alpina* is replaced further north, in Australia, by the *C. deusta*, Br., a native of the colony of Port Jackson, but hitherto no South American species except the one here described has been noticed. These three form together a very distinct group, as Mr. Brown has indicated (Prodr. p. 230).

Plate CXLVIII. *Fig.* 1, spikelet; *fig.* 2, floriferous and empty scale; *fig.* 3, achœnium, filamente, and setæ; *fig.* 4, base of setæ and filaments; *fig.* 5 and 6, achœnium; *fig.* 7, seed; *fig.* 8, same, cut open; *fig.* 9, embryo:—all *magnified*.

6. CAREX,* *L.*

1. Carex *ovalis*, Good. *in Linn. Trans.* vol. ii. p. 148. *Engl. Bot.* t. 306.

Var. *β, minor*, Brongn. *in Duperrey, Voy. Bot.* p. 149. C. Macloviana, *D'Urv. in Mém. Soc. Linn. Paris*, vol. v. p. 599.

* The species of this genus, and of *Uncinia*, have been determined and described by my kind friend Dr Boott.

Fitch. del et lith.

Chætospora laxa, Hook. fil.

Reeve, imp.

Fitch, del. et lith.

Reeve, imp.

Carpha schœnoides, Banks & Sol.

Hab. Falkland Islands; *D'Urville*.

I have seen no Falkland Island specimens of this plant; can it be the *C. festiva*?

2. Carex *festiva*, Dewey; spica composita e spiculis pluribus androgynis basi masculis in capitulum ovato-suborbiculatum arcte congestis, stigmatibus 2, perigyniis ovatis acuminato-rostratis bifidis ore antice oblique fisso nervosis marginatis denticulato-serratis squamam lanceolatam acutam æquantibus vel ea longioribus. *Boott.* C. festiva, *Dewey, in Sill. Journ.* vol. xxix p. 446. C. propinqua (?), *Nees et Meyen.*

Hab. Strait of Magalhaens; Port Gregory and Port Famine, *Capt. King*.

Culmus subpedalis, strictus, inferne glaber, foliis vaginantibus, rudimentisque foliorum pallide castaneis tectus, superne nudus, acutangulus, serrato-scaber. *Folia* 2 lin. lata, culmum æquantia vel breviora, margine scabra. *Spica* 8–9 lin. longa, 7–8 lin lata, nuda, vel bracteæ brevi subfoliacea basi suffulta. *Spiculæ* 8–12, vel plures, subrotundæ, arctissime congestæ, ferrugineæ, concolores. *Squamæ* lanceolatæ, acutæ, spicæ membranacco-pallidæ. *Antheræ* hispido-spiculatæ. *Stylus* exsertus. *Stigmata* 2, longa. *Perigynium* 2 lin. longum, lineam latum, utrinque nervosum, ferrugineum, marginibus alatis, e medio sursum denticulato-serratis. *Achænium* 8–9 lin. long., 5–9 lin. latum, oblongum, compressum, ferrugineum, basi stipiti abrupte spiculatum. *Boott.*

A *C. ovali*, Good., solum, spiculis pluribus, subrotundis, in capitulum arcte congestis, perigyniis paululum brevioribus, differt. *Boott.*

Dr. Boott has kindly favoured me with the range of this species, which is so wide in the northern hemisphere that we should quite expect that it will hereafter be found along the chain of the Cordillera. Commencing in Greenland on the east, it crosses to Unalaschka on the west by Cumberland House on Bear Lake, and thence runs south along the Rocky Mountains. In Europe it has hitherto been found in Lapland only.

3. Carex *curta*, Good., *in Linn. Trans.* vol. ii. p. 145. *Engl. Bot.* t. 386, C. spicata, *Banks et Sol. MSS. in Mus. Banks. cum icone.* C. similis, *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 599. *Kunth, En. Plant.* vol. ii. p. 403.

Hab. Strait of Magalhaens; Port Famine, *Capt. King*; Good Success Bay, *Banks and Solander*; Falkland Islands, abundant, *D'Urville, J. D. H.*

The present, Dr. Boott remarks, is decidedly the European *C. curta*, one Falkland Island specimen alone, out of very many, differing from the others in having ten spiculæ, the average number being six to eight.

The geographical distribution of this species is very wide, for it inhabits all Europe from the latitude of Lapland, where, according to Wahlenberg, it is excessively common, to the Mediterranean region, which it does not enter. In Arctic America again it is abundant, extending in the United States as far south as New York.

4. Carex *acaulis*, D'Urv., *in Mém. Soc. Linn. Paris*, vol. iv. p. 599. *Brong. in Duperrey, Voy. Bot.* p. 153. t. 28 A.

Hab. Falkland Islands, *D'Urville*.

A species wholly unknown to me, except through the figure and description of M. Bronguiart.

5. Carex *decidua*, Boott; spicis 4–7 atro-purpureis erectis, suprema masculæ vel androgynæ basi vel spice et basi masculis, reliquis fœmineis, superioribus sessilibus contiguis oblongis, inferioribus cylindraceis bracteatis evaginatis rarius geminatis, infima brevi pedunculata subremota, stigmatibus 2, perigyniis oblongo-ovatis rostellatis ore integro utrinque nervosis stipitatis pallidis deciduis squama oblonga obtusa atro-purpurea nervo pallido decidua longioribus latioribusque. *Boott.* C. cæspitosa, *Banks et Sol. MSS. in Mus. Banks. cum icone.*

Hab. Tierra del Fuego; Good Success Bay, *Banks and Solander*; Falkland Islands, *J. D. H.*

Radix stolonifera. *Culmus* 1–1½ pedalis, triqueter, glaber, pars spicas gerens 2–3 poll. longa. *Folia* 1–1½ lin. lata, culmo longiora, flaccida, marginibus scabridis. *Bracteæ* foliaceæ, evaginatæ, inferiores culmum superantes; auriculis 2 subrotundis, ferrugineis. *Spica* terminalis, subpollicaris, sæpius androgyna, basi, vel apice et basi masc.; *sterilis* 1–1½ lin lata; *androgyna* 3 lin. lata; *spicæ fœmineæ* 8–15 lin. longæ, 3–4 lin. latæ, *inferiores* interdum geminatæ, vel basi spicula minori auctæ; infima rarius 1–2 pollices remota. *Squamæ* omnes obtusæ, atro-purpureæ, nervo pallido infra apicem evanescente; fœmineæ perigynio breviores. *Pedunculus* infimus 3–6 lin. longus. *Perigynium* (cum stipite) 1½–1¾ lin. longum, ⅔ lin. latum, rarius ad margines superne denticulato-*serratum*, plus minus nervosum. *Achænium* ⅓ lin. longum, ⅓ lin. latum, orbiculatum, lenticulare, fuscum, *impresso*-punctulatum, basi styli æquali apiculatum.

Habitus *C. Goodenovii*, Gay, et forsan ejus nil nisi forma aberrans. Differt spica terminali sæpius androgyna; fœmineis rarius geminatis vel compositis, perigyniisque margine scabris, culmo glabro.

6. Carex *Andersoni*, Boott; spicis 7–9 atro-purpureis erectis, terminali mascula, fœmineis 6–8 oblongis cylindraceisque superioribus geminatis ternatisque sessilibus inferioribus simplicibus pedunculatis omnibus interdum apice masculis, stigmatibus 2, perigyniis ellipticis brevi-rostratis ore integro valide nervosis stipitatis pallidis squama ovata obtusa vel lanceolata acuta atro-purpurea nervo pallido brevioribus. *Boott.*

Hab. Strait of Magalhaens; Port Famine, *Capt. King.*

Culmus sesquipedalis, firmus, superne acutangulus, scaber, basi vaginis foliorum tectus, pars spicas gerens 3–5 poll. longa. *Folia* 2–3 lin. lata, margine scabra, culmo longiora; vagina intus albo-membranacea, longa, cylindracea; ligula ad foliam alligata, ferruginea, obtusa. *Bracteæ* evaginatæ, supremæ setaceæ, reliquæ latæ, foliaceæ, culmum longe superantes: auricula indivisa, amplectente, ferruginea. *Spica* mascula solitaria, 12–14 lin. longa, 2 lin. lata, vel exemplare unico spicâ alterâ minimâ (3 lin. longa) ad basin aucta. *Squamæ* latæ, obtusæ, atro-purpureæ, nervo viridi in inferioribus infra apicem evanescente; *spicæ* fœmineæ 6–8, contiguæ, 6–17 lin. longæ, 2–3 lin. latæ, inferiores longiores, simplices, cylindraceæ, brevi-pedunculatæ: superiores geminatæ vel ternatæ, inæquales, sessiles: omnes fœmineæ vel apice masculæ. *Squamæ* atro-purpureæ, ovatæ, vel inferiores lanceolatæ, muticæ, nervo pallido. *Stylus* inclusus. *Stigmata* 2, longa. *Pedunculus* infimus 2–8 lin. longus. *Perigynium* (*floriferum*) 1½ lin. longum, lineam latum, stipitatum, breve cylindraceo-rostratum, utrinque crebre et valide nervosum, pallidum, papillosum, superne marginibus parce serrato-scabriusculum, ore integro. *Achænium* suborbiculatum, *compressum*. *Boott.*

A *C. decidua* differt culmo validiori, firmo, acutangulo, scabro; foliis bracteisque latioribus; auricula indivisa, amplectente; spicis longioribus; terminali mascula, fœmineis sæpe apice masculis, mediis geminatis ternatisque; perigyniis paululum latioribus, squama interdum lanceolata acuta brevioribus. *Boott.*

7. Carex *Darwinii*, Boott; spicis 8–12 ferrugineis cylindraceis longe pedunculatis nutantibus 2 terminalibus masculis, fœmineis 6–10 remotis geminatis ternatisque foliaceo-bracteatis evaginatis basi laxifloris rarius infima simplici, stigmatibus 2, perigyniis ellipticis brevi-rostratis ore integro nervosis stipitatis papillosis squamâ lanceolatâ acuminatâ hispido-cuspidata ferruginea latioribus brevioribusque. *Boott.* (Tab. CXLV.)

Hab. Chonos Archipelago, *C. Darwin, Esq.*

Culmus tripedalis, validus, triqueter, glaber, sulcatus, basi foliatus, apice gracillimus, pars spicas gerens 12 poll. longa. *Folia* bipedalia et ultra, 3–4 lin. lata, nervosa: margine carina apiceque serrato-scabra, supra nervis 2 prominentibus notata, infra ad interstitia nervorum squamato-punctata. *Bracteæ* emarginatæ, foliaceæ, inferiores culmum longe superantes, auricula oblonga, ferruginea. *Pedunculi* triquetri, scabri, inæquales, ½–3 poll. longi. *Spicæ* fœmineæ ½–8 poll. longæ, 3 lin. latæ, cylindraceæ, basi laxifloræ, intervallis 2–4-pollicaribus remotæ, inferiores geminatæ, superiores ternatæ (spica interdum unica abbreviata sessili), exemplare solitario spica infima simplici,

Fitch, del. et lith.

Carex Darwinii, Boott.

Reeve, imp.

Fitch del et lith

Reeve imp

Carex Magellanica, Lam.

Fitch. del. et lith.

Carex Bankaii, Boott.

Reeve, imp.

nonnullisque spice masculis. *Squamæ* ferrugineæ, nervo pallido, inferiores hispido-cuspidatæ; (spicarum terminalium basis solum unius inferioris mascula sessilis adest, ceterо disruptæ.) *Perigynium* 1½ lin. longum, ⅓ lin. latum, ellipticum, breve acuminato-rostratum, ore integro, utrinque 4–5-nervatum, papilloso-asperatum, maculis ferrugineis notatum, stramineo-pallidum. *Achænium* 7–9 lin. longum, ⅔ lin. latum, orbiculato-obovatum, lenticulare, castaneum, basi styli æquali terminatum. *Boott.*

A *C. decidua* et *C. Andersono* spicis ferrugineis, elongatis, longe pedunculatis, nutantibus, remotis; squamis acutis, hispido-cuspidatis; perigyniis glabris, squamâ duplo brevioribus, satis distincta! *Boott.*

PLATE CXLV. *Fig.* 1, scale and stamens of male spike; *fig.* 2, scale and female flower; *fig.* 3, perigynium; *fig.* 4, the same cut open, showing the achænium:—all *magnified*.

8. CAREX *Magellanica*, Lamk.; spicis 3–4 androgynis basi masculis atro-purpureis concoloribus oblongis pedunculatis nutantibus bracteatis approximatis vel infima subradicali vaginata, stigmatibus 3, perigyniis suborbiculatis stipitatis rostellatis ore integro papillosis squama lanceolata apice acuminata involuta vix duplo brevioribus. *Boott.* C. Magellanica, *Lam. Encycl.* vol. iii. p. 385. *Schkuhr, Caric.* vol. i. p. 52. vol. ii p. 42. t. N. f. 51. *Kunth, En. Plant.* vol. ii. p. 435. C. atrata, β. Magellanica, *Fahl, Act. Hafn.* 1803. (TAB. CXLIII.)

HAB. Strait of Magalhaens, *Commerson*; Port Famine, *Capt. King*; Good Success Bay, *Banks and Solander*.

Radix e fibris lutescente-lanatis. *Culmus* 6–9-poll., acute triqueter, gracilis, firmus, apice scabriusculus, filiformis, pars spicas gerens plerumque 2–2½ poll. longa. *Folia* 1–1½ lin. lata, culmo breviora vel æquantia, margine carinaque scabra. *Bracteæ* infima foliacea, culmum æquans, reliquæ angustæ, spicis suis breviores, demum setaceæ, basi ligula ferruginea amplectente. *Spicæ* 6–9 lin. longæ, 5 lin. latæ, basi flosculis masculis paucis instructæ. *Squamæ* lanceolatæ, acuminatæ, apice involutæ, atro-purpureæ, concolores vel ad margines rufæ, eximie papillosæ, dorso trinerves. *Pedunculi* 8–14 lin. longi, capillares, apice infra spicam clavati, scabriusculi. *Perigynium* 1½ lin. long., 1 lin. latum, suborbiculatum, basi productum vel latiuscule stipitatum, minime rostellatum, ore integro, obsolete vel utrinque leviter 4–5-nervatum, stramineo-pallidum, superne atro-purpureo tinctum, papillosum; stylo persistente porrecto. *Achænium* lineam longum, ⅔ lin. latum, oblongo-triquetrum (uno specimine rarius 4-angulum).

Affinis *C. limosæ*, L., et congeneribus, præsertim *C. irriguæ*, Sm.

PLATE CXLIII. *Fig.* 1, scale and stamen of male spike; *fig.* 2, scale and female flower; *fig.* 3, perigynium; *fig.* 4, achænium:—all *magnified*.

9. CAREX *Banksii*, Boott; spicis 3–5 atro-purpureis oblongis basi cuneatis crassis exserte pedunculatis nutantibus terminali androgyna basi mascula reliquis fœmineis infima remota, stigmatibus 3, perigyniis hyalino-tenuissimis albidis compressis nervosis late ovatis cylindraceo-rostratis ore obliquo bifido glabris squama atro-purpurea oblongo-spathulata emarginata aristata brevioribus latioribusque. *Boott.* (TAB. CXLII.)

HAB. Tierra del Fuego; Good Success Bay, *Banks and Solander*, *C. Darwin, Esq.*

Culmus sesquipedalis, acute triqueter, glaber, basi foliatus, pars spicas gerens 4–7 poll. longa. *Folia* 2–3 lin. lata, carinata, culmo breviora, apice triquetro-acuminata, nervo margineque tuberculato-scabra. *Bracteæ* foliaceæ, vaginantes, infima culmum subæquans, supremæ squameformes. *Ligula* elongata. *Vaginæ* 7 lin.–1½ poll. longæ. *Spicæ* 3–5, omnes pedunculatæ, 7–14 lin. longæ, 4–5 lin. latæ, superiores approximatæ, infima intervallo 1½–4 poll. longo remota. *Squamæ* omnes atro-purpureæ, nervo pallidiori, laxiuscule imbricatæ. *Perigynium* brevissime stipitatum, 3½–⅞ lin. longum, 1⅛–⅞ lin. latum, album, tenuissimum, nervis tenuibus, rostro angusto, cylindraceo, fusco, oblique bifido. *Achænium* longe stipitatum, ⅔ lin. longum (cum stipite 1⅔ lin. longum), ¼ lin. latum, castaneum, acute triquetrum, lateribus concavis. *Boott.*

In Herb. Banksiano sunt specimina plura (cel. Banks et Solander in Tierra del Fuego lecta) sub nominibus *C. atratæ* et *C. Magellanicæ*, quarum omnia spicam terminalem androgynam basi masculam habent, sed spicæ cylindraceæ evadunt, et hinc ad *C. germanam* tendunt. *Boott.*

Affinis *C. Mertensio*, Prescott.

PLATE CXLII. *Fig.* 1, scale and stamens of male flower; *fig.* 2, female flower; *fig.* 3, perigynium; *fig.* 4, ovarium, style, and stigmata; *fig.* 5, ovule; *fig.* 6, ripe perigynium; *fig.* 7, ripe achænium: *fig.* 8, seed; *fig.* 9, longitudinal section of the same:—all *magnified*.

10. CAREX *germana*, Boott; spicis 4–6 fusco-ferrugineis 1 v. 2 terminalibus masculis, fœmineis 3–5 crassis cylindraceis densifloris superioribus sessilibus contiguis erectis inferioribus subnutantibus exserte pedunculatis infima interdum remota, stigmatibus 3, perigyniis ellipticis hyalino-tenuissimis albidis compressis brevi cylindraceo-rostratis ore obliquo bidentato nervosis squamam oblongam fusco-ferrugineam emarginatam aristatam subæquantibus. *Boott.*

HAB. Cape Tres Montes, *C. Darwin, Esq.*

Culmus 12–15-pollicaris, obtusangulus, glaber, foliis 2–3 vaginantibus instructus, apicem culmi attingentibus, basi foliatus, pars spicas gerens 4–10 pollices longa. *Folia* 2–3 lin. lata, glauco-viridia, apice triquetro-acuminata, nervis carina marginibusque tuberculato-scabra. *Bracteæ* vaginantes, superiores setaceæ, inferiores foliaceæ, culmum superantes. *Vaginæ* 3 lin.–2½ poll. longæ, basi purpureo-tinctæ. *Spica* mascula (uno specimine spicula altera minori basi aucta), 8–12 lin. longa, 2 lin. lata, squamis serrato-mucronatis. *Spicæ* fœmineæ 12–17 lin. longæ, 4 lin. latæ, cylindraceæ, densifloræ, obtusæ, superiores sessiles vel brevi exserte pedunculatæ (uno specimine), infima remota pedunculo tres pollices extra vaginam bipollicarem exserto instructa. *Squamæ* arcte imbricatæ, fusco-ferrugineæ, oblongo-spathulatæ, emarginatæ, obtusæ, nervo pallido serrato aristatæ. *Perigynium* 2½–3 lin. longum, 1½ lin. latum, album, nervis subnovenis pallide ferrugineis teneribus notatum, ellipticum, apice acuminatum, rostro brevi cylindraceo fusco-purpureo, ore obliquo bidentato. *Achænium* longe stipitatum, ¾ lin. longum (cum stipite 1½ lin. longum), ½ lin. latum, pallide castaneum, acute triquetrum, lateribus concavis. *Boott.*

Affinis *C. Banksio*, et quoad fructum non distinguenda. Differt spica terminali mascula, fœmineis cylindraceis densifloris, superioribus sessilibus nec basi cuneatis; squamis fusco-ferrugineis, arcte imbricatis; pedunculis validioribus; culmo obtusangulo foliisque glauco-viridibus. *Boott.*

I append the description of two new species of extra-tropical South American *Carices*; which, with those enumerated in the body of this work, include all that I know to exist in western Chili and Fuegia *.

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1. CAREX *acutata*, Boott; spicis 5–6 erectis cylindraceis fuscis masculis 1–2 sessilibus reliquis 4 fœmineis sæpe apice subulato-acutatis masculis densifloris sessilibus vel pedunculatis longe foliaceo-bracteatis alternatim contiguis, stigmatibus 3, perigyniis elliptico-lanceolatis subinflatis nervosis glabris nitidis squama purpureo-ferruginea concolori vel apice hyalina ciliata hispido-aristata longioribus. *Boott.* C. physocarpa, *Nees, in Herb. Hooker* (*non Presl.*)

HAB. In America merid. Ins. Chiloe, *Cuming*, n. 43. In Mont. Pilzhum, Columbia, ad alt. 12,000 ped., *Jameson*, (Herb. Hooker.)

Culmus acutangulus, validus, scabriusculus, pars spicas gerens 3–6 poll. longa. *Folia* 4 lin. lata, culmo longiora. *Bracteæ* foliaceæ, infima 3 lin. lata, culmum longe superans, nunc brevissime vaginata. *Spicæ* masculæ sessiles, 1–1½ poll. longæ, 1½ lin. latæ. *Squamæ* ferrugineæ, concolores, vel apice hyalino-albidæ, ciliatæ, brevi hispido-mucronatæ. *Spicæ* fœmineæ 4, (pars suprema plerumque tertia omnium sæpius subulato-acutata, mascula vel steriles) 1½ poll. longæ, 4 lin. latæ, densifloræ, superiores sessiles, approximatæ, inferiores plus minus longe pedunculatæ, intervallis 1½–2 poll. longis, remotæ, tamen omnes ob longitudinem pedunculorum contiguæ. *Squamæ* purpureæ,

11. Carex *indecora*, Kunth; spicis 3–5 oblongis erectis terminali mascula clavata subsessili reliquis fœmineis bracteatis sessilibus contiguis vel infima subremota exserte pedunculata, stigmatibus 3, perigyniis oblongo-ovatis acuminato-rostratis bidentatis demum ore integro utrinque leviter nervosis straminels lucidis squama æquilata purpurea trinervi obtusa vel emarginata hispido-cuspidata longioribus. *Boott.*

Var. *β, humilis*. C. fuscula, *D'Urville, in Mém. Soc. Linn. Paris*, vol. iv. p. 599. *Brongn. in Duperrey, Voy. Bot.* p. 154. t. 28 *b*.

Hab. Falkland Islands, *D'Urville, J. D. H.*

Culmus 4–12 poll., obtusangulus, lævis, basi foliatus, versus medium folio vaginante instructus, pars spicas gerens ½–5 poll. longa. *Folia* 1½–2 lin. lata, plana, culmo breviora, rigidiuscula, flavescente-viridia. *Bracteæ* erectæ, infimæ culmum superantes, vaginatæ, superiores angustæ, vaginas 2–7 lin. longæ. *Spicæ* 3–5, omnes interdum congestæ, sessiles; spica mascula 3–6 lin. longa, lineam lata, clavata, sessilis vel brevi-pedunculata. *Squamæ* uninerves, obtusæ, cuspidatæ. *Spicæ* fœmineæ 4–7 lin. longæ, 2–3 lin. latæ, contiguæ, vel infima intervallo 1–5 poll. longo remota, exserte (vel binæ inferiores plus minus longe exserte) pedunculata. *Squamæ* purpureæ, trinerves, obtusæ vel emarginatæ, valide hispido-cuspidatæ. *Pedunculi* 6–12 lin. longi, glabri, nunc vix exserti. *Styles* inclusus. *Perigynium* 1¾ lin. long., ¾ lin. latum, oblongo-ovatum, sensim acuminato-rostratum, bidentatum, demum ore integro, stramineum, punctis ferrugineis notatum, lucidum, punctulatum, glabrum, vel rarius superne ad margines serrato-scabrum, leviter (luci subjectum) utrinque nervosum. *Achænium* ⅓ lin. long., ⅓ lin. latum, pallidum, subrotundo-triquetrum, punctulatum, basi styli sequali apiculatum. *Boott.*

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concolores vel apice hyalino-albidæ, ciliatæ, nervo lato viridi in aristam latam hispidam producto. *Pedunculi* validi, erecti, infimus ½–2 poll. longus, evaginatus vel e vagina 4 lin. longa exsertus. *Perigynium* 1⅔ lin. longum, ⅔ lin. latum, nitidum, crebre nervosum, pallide viride, basi purpureo tinctum, pellucido-punctatum. *Achænium* (vix maturum) ⅔ lin. longum, oblongo-triquetrum, pallide stramineum, basi styli incrassato terminatum. *Boott.*

Affinis *C. paludosæ*, Good.

2. Carex *paleata*, Boott; spicis 7–10 cylindraceis masculis 2–4 sessilibus contiguis extremis longioribus infima longe bracteata fœmineis 3–7 remotis exserte ligulato-pedunculatis longissime bracteatis densiflоris basi attenuatis inferioribus nutantibus, stigmatibus 2–3, perigyniis obovatis rostellatis bifidis nervatis nervisque 2 marginalibus pallidis scabris cinctis olivaceis purpureo-maculatis squama ovata paleacea obtusa vel acuta trinervi late hispido-cuspidata brevioribus longioribusque. *Boott.*

Hab. In Ins. Juan Fernandez, *Dr. Scouler*. (Horb. Hooker et Fielding.) *Cuming*, n. 1341. (Herb. Boott.)

Culmi pars superior solum adest, triquetra, lævis, inter spicas scabriuscula, pars spicas gerens 10 poll. ad 2 ped. longa. *Folia* desunt. *Bracteæ* omnes culmum superantes, infima 3 lin. lata, superiores sensim angustiores. *Spicæ* masculæ 2–4, sessiles, contiguæ, 7–20 lin. longæ, 1–1½ lin. latæ, castaneæ, extremæ longiores, infima longe bracteata. *Spicæ* fœmineæ 5–7, intervallis 2½–3½ poll. remotæ, 1½–2½-poll. longæ, 2 lin. latæ, cylindraceæ, densiflоræ, basi attenuatæ, duæ superiores nunc apice masculæ, suprema interdum inclusa, pedunculata. *Pedunculi* ligulato-compressi, inferiores 2–2½ poll. longi, glabri, supremus interdum abbreviatus, infimusque versus apicem squamas alternas steriles longe cuspidatas ferens. *Vaginæ* 3 lin.–2 poll. longæ, glabræ. *Perigynium* 1⅔ lin. longum, ⅓ lin. latum, obovatum, rostellatum, bifidum, laciniis serratis, nervatum, nervisque 2 marginalibus prominentibus pallidis superne scabris cinctum, pallide olivaceum, purpureo-maculatum, plano-convexum vel triquetrum, coriaceum. *Achenium* ⅔ lin. longum, ⅔ lin. latum, obovatum, plano-triquetrum, atro-olivaceum, cavitatem perigynii implens. *Squamæ* omnes ovatæ, acutæ vel obtusæ, trinerves, late hispido-cuspidatæ; masculæ castaneæ; fœmineæ membranaceo-pallidæ. *Boott.*

Affinis *C. lucidæ*, Boott.

Affinis *C. extensæ*, Good., quæ perigyniis costato-nervosis, glaucis, squamis masculis muticis, foliis, bracteisque patentibus vel recurvis, sæpe involutis, differt. *Boott.*

12. CAREX *trifida*, Cav., *vid. Fl. Antarct.* Pt. 1. p. 89.

HAB. Cape Tres Montes, *C. Darwin, Esq.*; Falkland Islands, abundant, *D'Urville, Capt. Sulivan, J. D. H.*

A very noble species, abundant in the Falkland Islands, growing with, and emulating in size, young Tussock grass. Mr. Darwin alone has gathered it on the American continent, and he only at Cape Tres Montes. Its confined range is very singular, for it can scarcely have been overlooked in Fuegia or the Strait of Magalhaens, had it existed there; and it is also probably the only plant common to New Zealand and the Falkland Islands, not found abundantly in Tierra del Fuego.

Carex trifida affords a remarkable instance of apparent caprice in its choice of habitat; for though common in the Falklands, along with the *Dactylis cæspitosa* (Tussock grass), and though there these grow in company, and under precisely the same conditions, yet the Tussock grass in America only appears in the southern extreme of Fuegia, where it is unaccompanied by *Carex trifida*; whilst the latter is confined to a latitude eight hundred miles north of Cape Horn. There is nothing whatever in the climate or soil of any part of western South Chili, or Fuegia, that can be pronounced unfavourable to the growth of this *Carex*, whose absence there naturally leads to the question, how is its presence in Cape Tres Montes and the Falkland Islands to be accounted for? did it originate in each of these two isolated localities? was the seed transported over the intervening land, by an agent whose operations were limited to the eastern, and western extremes only of Antarctic America? or, have the individuals that once tenanted the intervening land, been destroyed? Any one of these hypotheses is at first sight plausible, and the first, perhaps, the most so, New Zealand being a third, and far more remote, habitat for this same species, which may thus be supposed to have had three separate origins. Such a question should not be discussed with reference to a single species, but as one which concerns all organized nature, whose phenomena are amenable to general laws. Hypotheses, adopted to account for exceptional cases, if not viewed in reference to the general rule from which these exceptions deviate, are generally fallacious; and however much so, they still are apt to be magnified into laws. If we knew only such plants as are sporadic (the term given to species which inhabit unconnected and remote localities) we might, perhaps, be justified in assuming it as an axiom, that individuals of a species have sprung, at isolated localities, from as many similar parents: the cases which appear to demand this solution are, however, exceptions in Botanical Geography.

The study of the distribution of any one species or genus, or of the Flora of any one country, does not afford scope enough for investigating satisfactorily such a subject as the origin of the individuals of plants. If species, genera, and small natural orders were sporadic, recurring wherever climate and soil presented similar conditions, several points of origin for the same species might be assumed. But it is not so: species, genera, and orders are distributed within geographical limits, according to their extent: the great mass of individual plants in the one case, and of forms in the other, appear to have sprung from single centres, in the former case from a common parent, and to have radiated from one point to greater or less distances around it, in proportion to the facilities for migration and absence of checks to diffusion. The explanation of exceptions to this prevailing rule must then be sought in some natural cause, capable of counteracting the general law, and not what, if adopted for the case of one species, must be conceded with respect to all, and consequently force us to conclude that two classes of agents are required to effect one object, namely, the dispersion of vegetables.

7. UNCINIA, *Pers.*

1. UNCINIA *tenuis*, Poepp., *Synops. Plant. Am. Austr.* vol. iii. n. 240. *Kunze, Synops. der Reidgr.* t. 21. *Kunth, En. Plant.* vol. ii. p. 525.

Hab. Strait of Magalhaens; Port Famine, *Capt. King*; Hermite Island; Cape Horn, *J. D. H.*

A species entirely confined to South Chili, between Concepcion and Cape Horn.

The four species enumerated in this work, together with *U. erinacea*, Pers. (a native of Valdivia and Chili) and two new ones *, diagnoses of which Dr. Boott has kindly given, include all the extra-tropical American *Uncinieæ* known to me.

2. Uncinia *phleoides*, Persoon, *Synops.* vol. ii. p. 534. *Brongn. in Duperrey, Voy. Bot.* p. 158 (*excl. syn.* U. Macloviana). *Hook. et Arn. in Bot. Voy. Beechey*, p. 50. Carex phleoides, *Cav. Icon.* vol. v. p. 40. t. 464. f. 1.

Hab. Chonos Archipelago; *C. Darwin, Esq.*

On several occasions I have alluded to the change which occurs in the vegetation of the western coast of South America, at, or about, the latitude of the Chonos Archipelago. This arises from many species extending to (but not crossing) that limit, both from much lower and higher latitudes, of which the present plant affords an example. *U. phleoides* inhabits the plain of Quito, under the equator, at an elevation of 8,000 feet; it grows also at

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1. Uncinia *multifaria*, Nees; spica erassa densiflora basi attenuata apice conico mascula nuda, stigmatibus 3, perigyniis (arista divaricata vix duplo brevioribus) linearibus ore truncato striato-nervosis scabris margine ciliatis squama oblonga obtusa pallida apice albo-membranacea ciliolata angustioribus longioribusque. *Boott.*

Hab. Chiloe, *Cuming* (n. 44. *Herb. Hooker.*)

Culmus subbipedalis, triqueter, firmus, lævis, inferne foliatus. *Folia* 3–4 lin. lata, culmo longiora vel sequantia, glaucescentia, margine versus apicem fuciceque scabra, supremum angustum. *Spica* 2½ poll. longa, superne 6 lin. vel aristis divaricatis mensurata 10 lin. lata, basi attenuata, (1 lin. lata), nuda; apice conico, (4 lin. longo), mascula. *Squamæ* oblongæ, obtusæ, pallidæ, demum fuscæ, apice ciliolatæ, albo-membranaceæ, infra apicem ferrugineo-zonatæ, nervo dorsali vix prominente; masculæ breviores. *Perigynium* 3⅔–⅚ lin. longum, ½ lin. latum, biconvexum, superne præcipue scabrum, margine ciliatum, pilis sursum longioribus demum fasciculatis, ore truncato ciliolato, arista 2 lin. extra os exserta, 5 lin. longa, divaricata, imo basi torta. *Achænium* 2 lin. longum, ⅘ lin. latum, triquetrum, utrinque sursum convexum, fuscum, impresso-punctulatum, apice et basi attenuatum. *Stylus* basi subincrassatus. *Stigmata* 3, non plumosa. *Boott.*

Ab *U. erinacea*, Pers., perigyniis linearibus diversa.

2. U. *Douglasii*, Boott; spica elongata lineari nuda apice mascula conformi, stigmatibus 3, perigyniis (arista ½ brevioribus) lanceolatis convexo-concaviusculis basi obconico attenuatis ore truncato plurinerviis margine scabris superne piliis appressis utrinque exasperatis pallidis squama amplectente ovata acuminata obtusa flavescenti-viridi angustioribus sublongioribusque. *Boott.*

Hab. Ins. Juan Fernandez. *David Douglas.* (*Herb. Hooker.*)

Culmus bipedalis, gracilis, lævis, nudus, basi foliatus. *Folia* 1–1½ lin. lata, culmo longiora, utrinque marginibusque scabra. *Spica* 5½–6 poll. longa, lineam lata, pars suprema mascula, subpollicaris, conformis. *Squamæ* ovatæ, acuminatæ, obtusæ, amplectentes, flavescenti-virides, striatæ, margine pallide-ferrugineæ, perigynio vix longiores, omnes conformes. *Perigynium* 2⅔–3 lin. longum, ½ lin. latum, lineare, hinc convexum, inde concaviusculum, basi obconico-attenuatum, dorso plurinervium, marginibus e basi scabrum, pilis sursum longioribus, superne piliis brevioribus appressis utrinque exasperatum, pallidum, lineolis ferrugineis maculatum, ore truncatum. *Achænium* 1⅓ lin. longum, ⅔ lin. latum, lineare, convexo-concaviusculum, facie dorsali linea centrali (trigulo) notatum, castaneum, impresso-punctulatum. *Arista* 3–⅚ lin. longa, pallide, filiformis, apice ferruginea, perigynio ¼ longior. *Stylus* inclusus. *Stigmatibus* 3. *Boott.*

Valparaiso, and Concepcion, again at Valdivia, finally disappearing at the Chonos Archipelago. Though we are now fairly acquainted with the botany of America south of lat. 33°, a more complete collection from the coast and mountains between the southern extreme of Chiloe and Cape Tres Montes is wanting; the proportion of new species would probably be small, but the investigation would exhibit the range of many Valdivian and Fuegian plants, not contained in the invaluable Herbarium of Mr. Darwin, the only naturalist whose good fortune it has been to visit and explore that unfrequented line of coast.

3. UNCINIA *Macloviana*, Gaud., *in Ann. Sc. Nat.* vol. v. p. 99, *et in Freyc. Voy. Bot.* p. 412. *Kunth, En. Plant.*, vol. ii. p. 526.

HAB. Falkland Islands; *Gaudichaud.*

When botanizing in the Falkland Islands early in the winter of 1841, I found what I considered to be this plant, growing amongst grass in wet spongy bogs; it was, however, in a very bad state, and the specimens, unfortunately, lost.

Brongniart unites this with *U. phleoides*, Pers.; but M. Kunth has kept it distinct.

4. UNCINIA *Kingii*, Boott; spica capitata fusca nuda apice mascula, stigmatibus 3, perigyniis (arista ½ brevioribus) lanceolatis superne angustiori cylindraceis ore truncato oblique fisso ferrugineis glabris squama lanceolata fusco-ferruginea nervo pallido angustioribus longioribusque. *Boott.* (TAB. CXLV.)

HAB. Strait of Magalhaens; Port Famine, *Capt. King.*

Cæspitosa. *Radix* repens, fibroso-lanatus. *Culmus* 2–4 poll., lævissimus, sulcatus, basi vaginis foliorum castaneis laceratis tectus. *Folia* angusta, involuta, hinc filiformia, culmo breviora, apice margineque scabra. *Spica* 5–7 lin. longa, 3–6 lin. lata, congesto-capitata, apice flosculis masculis paucis inconspicuis, basi fœmineis 9–16 instructa. *Squamæ* fœmineæ lanceolatæ, infima mucronulata. *Perigynium* (cum arista, stipiteque) 4½–5 lin. longum, ⅔ (ad basin) latum, superne cylindraceo-attenuatum, ore oblique fisso, fusco-ferrugineum, basi pallidum. *Achænium* 1 lin. long., ⅓ lin. latum, oblongo-triquetrum, pallidum, basi styli incrassato apiculatum. *Arista* 4–4½ lin. longa, canaliculata, pallida, superne ferruginea, imo apice dilatata. *Stylus* inclusus. *Stigmata* 3, brevia. *Boott.*

PLATE CXLV. *Fig.* 1, scale and male flower; *fig.* 2, scale and female flower; *fig.* 3, female flower, removed from the perigynium:—all *magnified.*

L. GRAMINEÆ,

1. ALOPECURUS, *L.*

1. ALOPECURUS *alpinus*, Smith, *Engl. Bot.* t. 1126. *Kunth, En. Plant.* vol. i. p. 25.

Var. β, *aristatus.* A. alpinus, *Trinius, Ic. Gram.* vol. i. t. 33. A. pratensis, *Banks et Sol. in Mus. Banks.* A. pratensis, *var.* spica ovata; *Ledebour, in Herb. Hook.* A. Baicalensis, *Turz. in Herb. Hook.* A. Antarcticus, *Vahl, Symb.* vol. ii. p. 18. *Brongn. in Duperrey, Voy. Bot.* p. 16. *Kunth, Agrost.* p. 25. A. Magellanicus, *Lamk. Illust. Gen.* vol. i. p. 168. *Gaudichaud, in Ann. Sc. Nat.* vol. v. p. 100, *et in Freyc. Voy. Bot.* p. 131. *D'Urville, in Mém. Soc. Linn. Paris*, vol. iv. p. 600. (TAB. CXXX.)

Var. γ, *gracilior*; spica angustiore.

HAB. From the Strait of Magalhaens to Cape Horn, and throughout Fuegia and the Falkland Islands, abundant, *Commerson, Banks and Solander*, and all succeeding voyagers. Var. β, Port Gregory, *Capt. King.*

This plant I believe to be specifically the same with the North-European and American *A. alpinus*, of which Smith considered it to be a variety. What appeared specific differences, were pointed out by Mr. Brown (*in Appendix*

Fitch, del et lith.

Reeve, imp.

Uncinia Kingii, Boott.

Fitch del. et lith.

Reeve imp.

Alopecurus Antarcticus. Vahl.

Muhlenbergia rariflora. Hook fil.

to Parry's 1st Voyage, p. 184.). Since the publication of the last mentioned work it has been universally looked as an Antarctic species alone, and its close affinity with the *A. pratensis*, of the Northern Hemisphere was never alluded to. The ordinary states of the latter plant have a longer and less hairy spike; but amongst the varieties of it which occur in North Western Asia, and N. Eastern America, there is one wholly undistinguishable from Antarctic individuals; and how far these may be constantly distinct appears very doubtful to me. Mr. Brown, in drawing up the characters of *A. alpinus*, alludes to his having gathered Scotch specimens with an arista twice as long as the glumes, such is the case with all the Antarctic ones, and in Trinius's figure of *A. alpinus*; but is at variance with Smith's specific character, (founded on Mr. Brown's specimens) and with the ordinary state of the Scotch plant. Mr. Watson, however, has gathered the same aristate variety of *A. alpinus* in Scotland, and has cultivated both forms in his garden. His garden specimens of both states are now before me, the long awned one retaining its characters, and the awns of the common form decidedly elongating under cultivation. The comparative length of the lamina and vagina of the uppermost leaf, is also very variable, even in *A. alpinus*, these being sometimes of equal length, while in the Antarctic plant the lamina is sometimes considerably the shorter; and, again, I have examined an European specimen of *A. pratensis*, in which the lamina is even longer than the vagina. The other characters of *A. pratensis*, used by Mr. Brown, are those of the glumes being acute, and villous only at the sides; this is the case with the British examples that I have studied, but not with the Siberian, which certainly present intermediate forms between this species, and its Fuegian congener. The Antarctic specimens vary exceedingly in size, from four inches, to two and even three feet high; the culms are generally tumid above the upper leaf and contract gradually towards the panicle; or they are slender, cylindrical and terete: the lamina of the upper leaf is occasionally far shorter than at other times, equal in length to, or much longer than its vagina. Spikes nearly cylindrical, 2–3 to 1½ inches long, generally rather more than twice as long as broad, but now and then much narrower. Glumes always more or less villous all over.

Admitting the foliage to afford no specific character between *A. alpinus*, *A. pratensis*, and *A. Antarcticus*, and the length of the arista to be very variable in the first of these, there remains no constant character to distinguish these three; for between *A. Antarcticus* and *A. pratensis* the only apparent distinctions lie in the villosity of the glumes, and the form of the spike, differences which do not hold in Siberian specimens of the latter. I have added a plate of the common Falkland Island state of this species.

PLATE CXXX. *Fig.* 1, glumes and floret; *fig.* 2, floret removed from the glumes; *fig.* 3, pistil:—all *magnified*.

2. PHLEUM, *L.*

1. PHLEUM *alpinum*, Linn. *Sp. Pl.* p. 88. *Banks et Sol. in Bibl. Banks. Engl. Bot.* t. 519. P. Hænkeanum, *Presl, Rel. Hænk.* vol. i. p. 245. *Nees, in Nov. Act. Acad.* vol. xix. *Suppl.* p. 140.

HAB. Strait of Magalhaens; Port Famine and Port Gregory, *Capt. King*. Good Success Bay, *Banks and Solander*.

This species, which is associated in the mountains of Scotland with *Alopecurus alpinus*, also accompanies that plant in the southern regions. It has been gathered by Mr. Bridges, on the east side of the Andes of Chili, at an elevation of 6–7,000 feet; and also on the Cordillera of Mexico by Linden, and by Galeotti on the Peak of Orizaba, at an elevation of between 10 and 12,000 feet.

3. MÜHLENBERGIA, *Schreb.*

1. MÜHLENBERGIA *rariflora*, Hook. fil.; rigida, glaberrima, panicula effusa pauci- sub 10-flora, glumis subæqualibus enervibus flosculo paulo brevioribus, palea inferiore lanceolata coriacea basi glaberrima in aristam longissimam rigidam scaberulam desinente superiorem breviorem amplectante, culmo foliato, foliis rigidis setaceis marginibus involutis. (TAB. CXXXI.)

HAB. Cape Tres Montes; Patch Cove, 2,000 feet, *C. Darwin, Esq.*

Gramen rigidum, cæspitosum, 4–6 pollicare. *Culmi* basi ascendentes, pluries divisi, vaginis coriaceis nitidis striatis foliorum vetustorum obtecti, parte superiore usque ad paniculam vaginati. *Foliorum vagina* 1–2 unc. longa, teres, glaberrima, profunde striata; *ligula* brevis; *lamina* vagina brevior v. superans, erecta, culmo brevior, rigida, anguste setacea, apice pungens, foliis superioris paniculam fere superans. *Panicula* 1½ unc. longa, pedunculo pedicellisque flexuosis, elongatis, lævissimis. *Spiculæ* purpureæ, nitidæ, vix 2 lin. longæ. *Glumæ* membranaceæ lanceolatæ, flosculo paulo breviores, inferiore paulo majore. *Flosculus* brevissime pedicellatus, pedicello barbato. *Palea* inferior in aristam desinens; arista 1–1½ unc. longa, siccitate curvata, madore recta, rigida, sub lente scaberula, apice gradatim attenuata, basi obscure articulata, haud v. vix torta, angulata. *Squamulæ* 2, lineari-oblongæ, obtusæ. *Stamina* 3. *Ovarium* stipitatum, supra medium constrictum.

Allied to *M. capillaris* of North America, in the form of the locustæ; but a very different species, and, I think, decidedly of the genus *Muhlenbergia*. The rigidity of the arista is quite like that of *Stipa*, as is the harsh foliage, while in other respects the plant has more affinity with the *Agrostideæ*.

PLATE CXXXI. *Fig.* 1, locusta; *fig.* 2, floret with portion of the awn removed; *fig.* 3, squamula; *fig.* 4, ovarium:—all *magnified*.

4. AGROSTIS, *L.*

1. AGROSTIS *tenuifolia*, Bieb., *Flor. Taur. Cauc.* vol. i. p. 56. *Trinius, Ic.* vol. iii. t. 35. *Kunth, En. Plant.* vol. i. p. 220.

Var. Fretensis; locustis paulo majoribus.

HAB. Var. *Fretensis*, Strait of Magalhaens; Port Famine, *Capt. King*.

I have compared this grass most carefully with authentic specimens of *A. tenuifolia* from Persia and the Caucasus, without being able to detect any further difference than in the size of the locustæ, which in the Antarctic plant are ⅛ of an inch long, the Caucasian scarcely $\frac{1}{10}$. Intermediate between them is a common Rocky Mountain species, collected by Douglas, and described as *A. exarata*, β., in the 'Flora Boreali-Americana' (vol. 2. p. 239). There are, however, two forms of *A. exarata* β., one from the east side of the Rocky Mountains, which has the scabrid broader leaves of the true *A. exarata*, and a distinct upper palea (this is the *A. Drummondi*, Torrey MS.), the other (or Douglas's), from the west side of the dividing ridge, is smaller, more slender, with small locustæ, and no upper palea; it agrees closely with the Magellanic plant in size and foliage, and bears the name of *A. tenuifolia*? Bieb., appended to it by Dr. Torrey.

The culms of *A. tenuifolia* β. are 15 inches to 2½ feet long, smooth, erect, and very slender. *Leaves* subsetaceous, obscurely scabrid. Lower palea truncate, 4-toothed and 4-nerved, with or without a short dorsal awn. Upper palea none, or when present extremely short.

2. AGROSTIS *alba*, *Linn., Sp. Pl.* p. 93. *Engl. Bot.* t. 1189. A. cæspitosa, *Gaud. in Ann. Sc. Nat.* vol. v. p. 100, et in *Freyc. Voy. Bot.* p. 181. *Kunth, Agrost.* p. 219.

Var. β, *stolonifera*. A. stolonifera, *Linn. &c.*

HAB. Falkland Islands, both varieties abundant, but possibly introduced; *Gaudichaud, Mr. Wright, J. D. H.*

The lower palea in my specimens is obscurely 4-nerved, or, in var. β., 5-nerved, with occasionally a very short awn, never projecting beyond the glumes. The upper palea is one third shorter than the lower. This grass forms a very good pasturage, both in the upland and lowland districts about Port Louis, but is not very abundant, which it may become if it be an introduced plant. The var. *stolonifera* is the famous 'Fiorin grass,' or 'Squitch' of Dr. Richardson and the Irish agriculturists.

3. AGROSTIS *prostrata*, Hook. fil.; culmo longe procumbente geniculato stolonifero, panicula erecta contracta lineari-oblonga densiflora, glumis latiusculis acuminatis carina scabrida flosculum basi glaberrimum superantibus, palea inferiore truncata apice erosa enervi superiore bis longiore, arista nulla, foliis breviusculis planis glaberrimis v. obscure scaberulis.

HAB. Falkland Islands; boggy ground on Hog Island, Berkeley Sound, rare, *J. D. H.*

Gramen humile, glaberrimum, repens. *Culmi* prostrati, 3–4 unc. longi, parte ascendente bi- tri-pollicare, nodosi, stoloniferi, foliosi, glaberrimi, internodo terminali solummodo erecto, unifoliato. *Foliorum vagina* elongata, profunde striata, glaberrima; *ligula* breviuscula, late ovata, membranacea; *lamina* vagina brevior, patens, sub 1 unc. longa, plana, striata, e basi latiuscula ad apicem acuminatum gradatim angustata. *Panicula* uncialis, ½ unc. lata, interrupta, densiflora, ramis ramulisque brevibus, fastigiatis. *Locustæ* glaberrimæ, 1½ lin. longæ, nitidæ.

To all appearance a very distinct species, allied to *A. alba*, var. *stolonifera*, but differing in the much smaller size, coarctate panicle, smaller locustæ and florets, absence of an arista, &c.

4. AGROSTIS *Falklandica*, Hook. fil.; dense cæspitosa, glaberrima, panicula gracili ramis erectis, glumis æqualibus ovato-lanceolatis acuminatis glabratis carina scaberula flosculis basi nudis ¼ longioribus, palea inferiore apice erosa truncata obscure 5-nervi nervo medio infra medium evanido, arista glumis breviore v. nulla, palea superiore nulla, foliis radicalibus filiformibus culmo gracili erecto longioribus.

Var. *α*, culmo folia bis terve superante.

Var. *β*, culmo folia vix superante.

HAB. Falkland Islands; var. *α* and *β* in marshy places, on rocks near the sea, and on the hills, abundant.

Gramen dense cæspitosum, gracile, 3 unc. ad pedalem. *Culmi* e basi erecti, foliis interdum duplo triplove longiores, basi foliati, superne exemplaribus elatioribus longe nudi, leves, obscure striati, glaberrimi. *Foliorum* inferiorum *vagina* breviuscula, gracilis, striata, 1 unc. longa, superiorum elongata profundius striata, 2–3 unc. longa; *ligula* membranacea, truncata; *lamina* angustissima, filiformis, erecta, herbacea, glaberrima, 3–5 unc. longa, apice gradatim angustata. *Panicula* ¾–1½ unc. longa, ramis erectis elongatis pauciflora, in var. *β* brevioribus. *Locustæ* sub 1½ lin. longæ, juniores puberulæ, demum glabratæ.

Apparently a variable plant, its very narrow filiform leaves are characteristic of this species amongst its Antarctic allies.

5. AGROSTIS *Magellanica*, Lamk. (?); glaberrima, cæspitosa, panicula elongata laxiflora nutante v. inclinata, ramis pedicellisque scabridis, glumis majusculis æquilongis glaberrimis nitidis carina scabridis flosculo basi barbato fere triplo longioribus, palea inferiore apice truncata 4-dentata obscure 5-nervi, nervo intermedio ad medium in aristam recurvam glumas superantem desinente, palea superiore inferiore ¼ breviore, foliis planis longe lineari-lanceolatis gradatim angustatis, culmis cæspitosis vaginatis. A. Magellanica, *Lamk. Illust. Gen.* n. 807. *Poiret, Encycl. Méth. Suppl.* vol. i. p. 207. *Kunth, Agrost.* p. 221.

HAB. Strait of Magalhaens; Port Famine, *Capt. King.*

Culmi erecti, basi cæspitosi, 1–1½ pedales, glaberrimi, nitidi, herbacei, foliis vaginati, stricti, infra paniculam scaberuli. *Folia* paucа; *vagina* elongata, 3–5 unc. longa, profunde striata, glaberrima; *ligula* membranacea, oblonga, obtusa; *lamina* suberecta v. patens, plana, linearis, striata, gradatim acuminata, herbacea, vaginæ suæ subæquilonga. *Panicula* subcontracta, elongata, 3–5-pollicaris, nutans v. inclinata; ramis verticillatis, erectis, divisis pedicellisque scaberulis. *Locustæ* sub 2 lin. longæ, micantes. *Glumarum* valvæ subæquales, compressæ, dorso scaberulæ, acuminatæ, flosculo fere ter longiores. *Floseuli* basi barbati. *Palea inferior* membranacea,

nervis obscuris, dorso arista basi recurva deinde incurva instructa. *Arista* glumas superans, gracilis, scaberula. *Palea* superior latiuscula, membranacea, obscure bifida,

I have presumed this to be the *A. Magellanica* of Lamarck, for it agrees with his insufficient description, and also with the longer one given by Poiret, except that the awn is not terminal, though so described (possibly through inadvertence) by that author. As a species it is very nearly allied to the following, but may be distinguished by the larger glumes, greater size, and conspicuous upper palea.

6. AGROSTIS *Antarctica*, Hook. fil.; erecta, cæspitosa, panicula elongata nutante v. inclinata subdensiflora, ramis subverticillatis pedicellisque scabridis, glumis æqualibus pilosiusculis glabratisve carina scabridis flosculum basi glaberrimum bis longioribus, palea inferiore apice truncata 4-cuspidata 5-nervi, nervo intermedio ad medium in aristam glumas superantem desinente, superiore parva, squamulis oblongo-acinaciformibus subacutis. A. Magellanica, *Gaud. in Ann. Sc. Nat.* vol. v. p. 100, *et in Freyc. Voy. Bot.* p. 131 (?). (TAB. CXXXII.)

HAB. South Chili and Fuegia, from the Chonos Archipelago to Cape Horn, the Falkland Islands and Kerguelen's Land, very abundant.

Statura variabilis. *Culmi* 2 unc. ad bipedalem, graciles, superne nudi v. vaginis foliorum tecti. *Folia* et *inflorescentia A. Antarctica*, sed foliorum vaginæ plerumque latiores, panicula densior, locustæ minores, arista paulo longior, paleaque superior multoties minor.

Agrostis Antarctica is one of the most abundant of grasses in the regions it inhabits, especially in swampy grounds, which seem particularly favourable to its growth. It is also a very elegant plant, from its graceful habit and the form of its nodding panicle. It may be the true *A. Magellanica* of Lamarck, and judging from its abundance, appears natural to suppose so; but the very short upper palea is not alluded to in that author's description, and Poiret's observation that the upper is the longest, would imply that there is no remarkable difference in their length. Considering the invalid nature of the characters afforded by the comparative length of the palea in this genus, it is probable that this and the preceding are but varieties of one and the same plant.

Kerguelen's Land specimens are frequently monstrous; the lower glume being then provided with two parallel distinct nerves, and in other cases I have seen three distant valves, two outer and one inner. The lower palea again has the arista sometimes placed on one side of its base.

PLATE CXXXII. *Fig.* 1, locusta; *fig.* 2, floret; *fig.* 3, squamulæ and pistil; *fig.* 4, squamula:—all *magnified*.

5. POLYPOGON, *Desf.*

1. POLYPOGON *Chonoticus*, Hook. fil.; panicula ampla oblonga subeffusa lobata densiflora, ramis glabriusculis pedicellisque scaberulis, glumis pubescentibus apice oblique truncatis aristis valvis bis longioribus, palea inferiore superne 5-nervi truncata 5-aristata aristis 2 lateralibus subelongatis intermedio palea triplo longiore, culmo vaginato, foliis planis scaberulis striatis vaginis brevioribus.

HAB. Chonos Archipelago and Cape Tres Montes, *C. Darwin, Esq.*

Graminis pulchrum, bipedale. *Culmi* validi, erecti, per totam longitudinem vaginati. *Folia* radicalia breve vaginantia, superiorum vagina internodos fere æquans, glaberrima, lævis, profunde striata; *ligula* brevissima; *lamina* 5-pollicaris, lanceolato-subulata, e basi latiuscula gradatim angustata, super præcipue scaberula. *Panicula* 4–5 unc. longa, 1–1½ lata, lobata, sericea, ramis e copia locustarum velatis. *Glumæ* 1½ lin. longæ, pubescenti-scaberulæ, carina scabrida, apice oblique truncata, vix acuta, in aristam pallidam v. purpuream desinentes, flosculos longiores. *Palea* inferior membranacea, basi enervis, superne 5-nervis, nervis 2 lateralibus in aristas paleæ

Agrostis Antarctica. Hook fil.

æquilongas productis, nervo intermedio in aristam terminalem tenuissimam, aristis glumarum brevioremi producto; palea superior brevior, apice bidentata.

The four-aristate lower palea of this species distinguishes it at once from any of its congeners. Mr. Darwin's, and one gathered in Chiloe by Capt. King, are the only specimens I have seen.

6. ARUNDO, *L.*

1. ARUNDO *pilosa*, D'Urville, *in Mém. Soc. Linn. Paris*, vol. iv. p. 600. *Kunth, Agrost.* p. 247. Ampelodesmos australis, *Brongniart, in Duperrey Voy. Bot.* p. 31. t. 6.

HAB. Falkland Islands, abundant; *D'Urville, Mr. Wright. Capt. Sulivan, J. D. H.*

A fine species and first pointed out to me by my friend Governor Moodie, as forming, next to the Tussock, the most useful grass in the Falkland Islands, for fodder. It abounds both in wet and dry places, in the upland and low grounds, affording excellent pasturage, and even when cut and dried it is eaten with avidity by horses, sheep, and cattle. A very similar congener inhabits the lofty peak of Tolima, in New Grenada, north of the Equator.

7. HIEROCHLOE, *Gmel.*

1. HIEROCHLOE *Magellanica*, Hook. fil. Torresia Magellanica, *Pal. Beauv. Agrost.* p. 63. *Roem. et Schultes, Syst. Veg.* vol. ii. p. 516. H. Antarctica, *var.* redolens, *Brongn. in Duperrey, Voy. Bot.* p. 144. t. 23. *optime.* Avena redolens, *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 601.

HAB. Strait of Magalhaens and throughout Fuegia and the Falkland Islands, very abundant, *Banks and Solander*, and all succeeding voyagers.

Under *H. redolens*, in the first part of this work, I have pointed out the very slight distinctions that separate this plant both from it and from the Tasmanian *H. Antarctica*, Br.: I consider them scarcely valid, though constant in specimens from the three widely separated localities they inhabit. In the Falkland Islands this grass is particularly abundant, forming large tufts and often beds, especially near running water and on wet rocks close to the sea, and is much frequented by sea-birds, as a building place. The scent is very strong, and retained in the dried specimens. Living plants introduced, by means of Ward's cases, into the Kew Gardens, have flourished luxuriantly, hitherto without flowering.

8. AIRA, *L.*

1. AIRA *flexuosa*, Linn., *Sp. Pl.* p. 96. *Engl. Bot.* t. 1519. *Gaud. in Ann. Sc. Nat.* vol. v. p. 100. *et in Freyc. Voy. Bot.* p. 100. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 600.

HAB. Strait of Magalhaens; Port Famine and Port Gregory, *Capt. King*; Falkland Islands, *Gaudichaud*, and all succeeding voyagers.

An exceedingly abundant Falkland Island grass, and a great ornament to the black peat bogs, which are frequently clothed with its elegant purple panicles. The foliage is too scanty and of too rigid a texture to afford good pasturage.

I do not detect any difference between Falkland Island and European specimens. Mr. Watson remarks that this is, perhaps, the *A. uliginosa*, Weihe; a plant I do not know, but quoted by Kunth as synonymous with *A. flexuosa*.

2. AIRA *caryophyllea*, Linn., *Sp. Pl.* 97. *Engl. Bot.* t. 812.

Hab. Falkland Islands, *Mr. Wright. J. D. H.*; probably introduced.

There are specimens of this species in the Hookerian Herbarium, marked as collected in the Falkland Islands by Admiral D'Urville, and others sent from Valdivia by Mr. Bridges. The plant is unquestionably the common European "Silver Hair Grass", and accidentally introduced, for, as Mr. Curtis remarks, "so insignificant an annual can hardly be worth cultivating."

3. Aira *Kingii*, Hook. fil.; glaberrima, elata, panicula elongata effusa, ramis gracilibus subverticillatis, glumis lanceolatis acuminatis albidis nitidis vix puberulis flosculis pedicellatis ter longioribus, palea inferiore basi longe et dense sericeo-barbata apice truncata vix bifida irregulariter 4-dentata puberula obscure 3-nervi, nervo intermedio supra medium in aristam rectam palea paulo longiorem desinente superiore bifido, foliis lineari-elongatis culmo brevioribus vaginis profunde striatis duplo brevioribus. (Tab. CXXXV.)

Hab. Strait of Magalhaens; Port Famine, *Capt. King*; South part of Tierra del Fuego, *C. Darwin. Esq.*

Gramen elatum, 2–4-pedale, perenne, glaberrimum, nitens. *Culmi* cæspitosi, erecti, simplices, 2–3-nodosi, crassitie pennæ anatinæ, obscure striati, internodiis 4 unc. ad spithamæum et ultra. *Foliorum* radicalium *vagina* 4–5 unc. longa, lamina brevior, caulinorum internodiis brevior, profunde striata, fere ad basin hians; *ligula* oblonga, scariosa, alba; *lamina* angusta, herbacea v. subcoriacea, linearis, glaberrima, striata, marginibus siccitate involutis. *Panicula* 6–10 unc. longa, inclinata, effusa, ramis fasciculatis verticillatisve, gracillimis, divisis, inferioribus ½ paniculæ æquantibus, glaberrimis, superioribus pedicellisque scaberulis. *Spiculæ* lineari-oblongæ, fere ¼ unc. longæ, albidæ, basi purpurascentes, scariosæ, nitidæ. *Glumæ* 1-nerves, angustæ, acuminatæ. *Flosculi* parvi, sub-longe pedicellati, inclusi, glumis ter breviores, pedicello ciliato. *Paleæ* puberulæ, albidæ, micantes, scariosæ, subæquilongæ. *Stamina* sub-inclusa, antheris breviusculis. *Squamulæ* oblique lanceolato-ovatæ, acuminatæ. *Ovarium* compressum, obovato-oblongum, stylis basi discretis.

A very handsome grass, somewhat resembling the British *A. cæspitosa*, but with very different locustæ and florets.

Plate CXXXV. *Fig.* 1, locustæ; *fig.* 2, floret; *fig.* 3, stamens and pistil; *fig.* 4, squamula:—all *magnified*.

4. Aira *Magellanica*, Hook. fil.; puberula, panicula effusa pauciflora rachi ramisque elongatis gracilibus pubescenti-scaberulis, glumis ovato-lanceolatis acuminatis subæqualibus pubescentibus dorso scabridis flosculis stipitatis longioribus superiore basi 3-nervi, palea inferior late ovata basi sericeo-barbata puberula 5-nervi, nervo intermedio infra apicem irregulariter 4-dentatum in aristam strictam glumis inclusam desinente, foliis planis latiusculis super pubescentibus. (Tab. CXXXIV.)

Hab. Strait of Magalhaens; Port Famine, *Capt. King*.

Species parvula, erecta, 6–8-uncialis. *Culmi* erecti, basi cæspitosi, simplices, folinti. *Foliorum vagina* teres, striata, hians, glabrata v. glaberrima; *ligula* brevis, ovata, obtusa; *lamina* vagina plerumque brevior, 1–1½ unc. longa, flaccida, lineari-lanceolata, acuminata, plana, striata, super pilis sparsis puberula, subter glaberrima. *Panicula* exemplaribus verosimiliter immaturis basi vaginæ inclusa, gracilis, inclinata, effusa; ramis filiformibus, fasciculatis verticillatisve, divisis, flexuosis. *Glumæ* sub ½ unc. longæ, subæquales, compressæ, ovato-lanceolatæ, acuminatæ, puberulæ, herbaceæ, virides et purpurascentes, opacæ. *Flosculi* glumis ter breviores, cum arista omnino inclusi. *Paleæ* subæquilongæ, inferior latiuscula. *Stamina* inclusa, antheris latiusculis. *Squamulæ* lineares, acuminatæ, *Ovarium* breviter stipitatum.

Capt. King's specimens of this pretty *Aira* are scarcely mature, though sufficiently developed for examination; the species ranks very near a Rocky Mountain one, chiefly differing in its smaller size, and in the pubescent upper surface of its leaves and glumes.

Plate CXXXIV. *Fig.* 1, locusta; *fig.* 2, floret; *fig.* 3, stamens and pistil; *fig.* 4, squamula:—all *magnified*.

Reeve, imp.

Fitch, del. et lith.

Aira Kingii, Hook. fil.

Fitch del et lith.

Reeve imp.

Aira Magellanica. Hook. fil.

Fitch del et lith

Reeve imp

Aira Antarctica. Hook.

5. AIRA *Antarctica*, Hook.; paniculâ effusissimâ ramis fasciculatis capillaribus pedicellisque elongatis, spiculis lanceolatis 1–2-floris setulaque flosculi secundi tertiive auctis, flosculis puberulis pedicellatis basi sericeis, palea inferiore profunde bifida basi aristata, arista glumas superante, culmo brevi, foliis subulatis longe vaginantibus. A. Antarctica, *Hook. Ic. Plant.* t. 150. (TAB. CXXXIII.)

HAB. Hermite Island, Cape Horn, the Falkland Islands, and Kerguelen's Land, abundantly, *J. D. H.*; New South Shetlands, *Dr. Eights*.

Planta phænogamica ante omnia Antarctica. *Culmi* dense cæspitosi, breves, 1–3-unciales, erecti procumbentesve, foliosi. *Folia* glaberrima, herbacea, longe vaginantia; *vagina* ½–1½ unc. longa, teres, striata; *ligula* linearis, ¼ unc. longa; *lamina* anguste linear-subulata, marginibus involutis, vaginæ æquilonga v. longior. *Panicula* pro planta maxima, 4–6 unc. longa, effusa, 3–6 unc. lata, v. ob ramos appressos angustior; ramis 1–5 unc. longis pedicellisque scaberulis, capillaribus. *Spiculæ* angustæ, fere ¼ unc. longæ, 1–2 floræ, uniflores semper bifloresve sæpissime pedicello ciliato floris alterius aucto. *Glumæ* lanceolatæ, carina scabrida marginibus sub lente ciliatis, apicibus acutis, flosculis pedicellatis inclusis bis longiores. *Palea* inferior ciliata, oblongo-lanceolata, scarioso-membranacea, bifida v. fere bicuspidata, sinu quadrato bidentato, dorso basi aristata; *arista* recta, scaberula, paulo ultra glumas exserta. *Stamina* exserta, antheris brevibus. *Squamulæ* oblique ovatæ acuminatæ. *Ovarium* breviter stipitatum, stylis basi discretis divaricatis.

This elegant grass, appropriately named *A. Antarctica*, attains a higher southern latitude than any other flowering plant, being the only phænogamic species that inhabits the South Shetland Islands. Kerguelen's Land in latitude 48° is its northern limit; but that Island being situated in a longitude where the rigour of the Antarctic climate extends further north than in any other, this grass is even there more typical of the frigid zone than the latitude would indicate, and always seeks the most sheltered places. In the Falkland Islands again, the most temperate region it inhabits, it invariably avoids shelter, being found chiefly in open marshy places near the sea, fully exposed to the violence of the winds.

PLATE CXXXIII. *Fig.* 1, two locustæ and portion of panicle; *fig.* 2, a floret from the same; *fig.* 3, squamula; *fig.* 4, single-flowered locusta; *fig.* 5, floret from the same:—all *magnified*.

6. AIRA *parvula*, Hook. fil.; cæspitosa, puberula v. glabrata, panicula erecta contracta subsimplici pauciflora ramis brevibus locustisque erectis, glumis lanceolatis acuminatis flosculis pedicellatis triplo longioribus, palea inferiore late ovata basi barbata apice bifida inter segmentos acutos bidentata dorso supra basin aristata, arista geniculata glumas vix excedente, foliis setaceis culmo brevioribus.

HAB. Hermite Island, Cape Horn; rocks near the mountain tops, *J. D. H.*

Gramen 3–5-unciale, foliosum, dense cæspitosum, rigidiusculum. *Culmi* erecti, basi fibrosi et pluries divisi, foliis perplurimis vaginati. *Folia* 2 unc. longa, stricta, erecta, anguste subulata, glabrata v. pilis patulis puberula, subcoriacea, marginibus involutis; *vagina* latiuscula, membranacea; *ligula* valde elongata, scariosa, linearis, acuminata. *Panicula* 1–1½-uncialis, stricta, erecta; ramis paucis, brevibus, 1-floris, paniculæ appressis. *Locustæ* ¼ unc. longæ. *Glumæ* æquales, glabriusculæ. *Flosculorum* pedicelli sericeo-barbati; flosculi superioris *palea* superior setula aucta. *Squamulæ* ovatæ, acuminatæ. *Ovarium* obtusum, stylis discretis, lateralibus.

A remarkably distinct little species, most nearly allied to *A. Antarctica*, but distinct in the foliage, the very different panicle, and shorter florets.

9. TRISETUM, *Kunth*.

1. TRISETUM *subspicatum*, Beauv., *Agrost.* p. 88. *Fl. Antarct.* Pt. 1. p. 97. T. andinum, *Benth. Plant. Hartweg.* p. 261. n. 1449.

Hab. Strait of Magalhaens; Port Famine, *Capt. King*; Hermite Island, on sandy beaches near the sea, *J. D. H.* Falkland Islands, most abundant, *D'Urville*, *J. D. H.*

In the first part of this work I have given the geographical range of the *Trisetum subspicatum*, when noticing it as a native of Campbell's Island; at which time I was not aware of any other South American station for it than the Andes of Peru. Since then I have seen several specimens collected both in the Cordillera of Columbia and in Mexico, whence it is evident that this plant, like many common to the opposite temperate zones, has availed itself of the direct communication afforded by the Andes of the American continent for migrating from the Northern to the Southern Hemisphere. Its great abundance in the New World and especially in the extreme South of America, coupled with its rarity in the southern regions of the Old World, where it is only known on the tops of the mountains of Campbell's Island, seem to indicate its having been transmitted from east to west, or against the course of the prevailing winds in the Antarctic regions.

10. AVENA, *L.*

1. Avena *leptostachys*, Hook. fil.; glaberrima, nitida, panicula gracillima flexuosa nutante ramis breviusculis subverticillatis capillaribus paucifloris, glumis inæqualibus inferiore flosculo ½ breviore, palea inferiore lanceolata basi barbata bicuspidata inter segmenta aristata, arista gracili reflexa locusta bis longiore, culmis gracilibus, foliis planis elongatis.

Hab. Strait of Magalhaens; Port Famine, *Capt. King*.

Culmus exemplare incompleto pedalis, gracilis, erectus, debilis, foliis vaginatus, nitens. *Folia* caulina longe vaginantia; *vagina* teres, striata, 5-unc. longa; *ligula* membranacea, ovata, fimbriata; *lamina* 6–8-pollicaris, ½ unc. lata, flaccida, membranacea, striata. *Panicula* 6 unc. longa; ramis capillaribus, ½–1-uncialibus, glaberrimis. *Locustæ* ½ unc. longæ, bifloræ; flosculis pedicellatis; superiore longius pedicellato, setula ciliata aucto. *Glumæ* ovato-lanceolatæ, acuminatæ, glaberrimæ; inferiore ½-minore, 1-nervi; superiore 3-nervi. *Palea* inferior lanceolata, puberula, 1-nervis, nervo dorso scaberulo; superior brevior, apice bicuspidata. *Squamulæ* 2, oblongæ, laceræ. *Ovarium* obovatum, breviter stipitatum, apice barbatum; stylis lateralibus, basi paulo discretis.

A very elegant species, of which I regret having seen but one culm, which wants the rooting portion. It is nearly allied to the United States *Avena palustris*, Mich.; from which it may readily be distinguished by the smaller locustæ, more exserted florets, and unequal glumes.

11. POA, *L.*

1. Poa *scaberula*, Hook. fil.; erecta, gracilis, scabrida, panicula subsecunda coarctata densiflora, glumis 3-floris subæqualibus 1-nerviis puberulis dorso scabridis, flosculis pubescentibus basi lanatis breviter pedicellatis, palea inferiore subcarinata 3-nervi, nervis lateralibus tenuissimis inconspicuis, carina dorso superne scabrida inferne ciliato-plumosa, superiore ½ breviore apice 2-dentata, foliis lineari-setaceis scaberulis culmo gracili erecto scabrido multoties brevioribus.

Hab. Strait of Magalhaens; Port Famine, *Capt. King*.

Radix fibrosa. *Culmi* erecti v. basi ascendentes, pedales et ultra, graciles, striati, scaberuli. *Folia* pauca, longe vaginantia; *vagina* scaberula, profunde striata; *lamina* 3–5-uncialis, setacea, involuta; *ligula* ovata, obtusa, membranacea. *Panicula* 2–3-pollicaris, coarctata, basi interrupta, unilateraliter secunda, ½–¾ unc. lata. *Locustæ* parvæ, ¼ unc. longæ, puberulæ, purpureo-pictæ, late ovatæ, sub 3-floræ. *Glumæ* virescentes, compressæ, locusta ½ breviores, acutæ. *Flosculi* basi longe arachnoideo-lanati. *Palea* superior acuta, membranaceo-marginata. *Squamulæ* parvæ, ovatæ, acuminatæ.

I know of no species with which the present can be confounded. The scabridity, coarctate panicle, dense locustæ, and other characters at once distinguish it from its congeners.

W Hoch. del.

Reeve imp

Poa Kerguelensis Hook fil.

2. Poa *nemoralis*, Linn., *Sp. Pl.* 102. *Engl. Bot.* t. 1265.

Hab. Strait of Magalhaens; Port Gregory, *Capt. King*.

Most distinctly the *P. nemoralis* of Ben-Lawers, whose flowers are slightly webbed at the base. It is also a Rocky-Mountain plant, but has not hitherto been found on the Cordillera of South America.

3. Poa *prateneis*, Linn., *Sp. Pl.* 99. *Banks et Sol. in Mus. Banks. Engl. Bot.* t. 1073. P. compressa, *var.* virescens, *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 600. P. alpina, *Brongn. in Duperrey, Voy. Bot.* p. 44, *non Linn.*

Var. 1, ligula foliі superioris oblonga, panicula laxa, glumis 4-floris paleisque angustioribus.

Var. 2, panicula subcoarctata, glumis latioribus brevioribusque 2–3-floris.

Var. 3, panicula effusa, glumis 3–5-floris.

Var. 4, panicula coarctata, glumis sub 4-floris paleisque angustioribus, flosculis basi fere nudis.

Var. 5, 6-uncialis, locustis minoribus 2–3-floris.

Hab. Strait of Magalhaens; Port Famine, *Capt. King* (*vars.* 1, 3, and 4), Good Success Bay, *Banks and Solander*; Falkland Islands, abundant (*vars.* 2 and 5).

I cannot ascertain the identity of this species with the European *P. pratensis*, so satisfactorily as that of the former with *P. nemoralis*; nevertheless, the more the present grass is studied, the more difficult it appears to detect specific characters. The five varieties enumerated, appear all to belong to one plant; except, perhaps, the *var.* 1, in which the ligula of the upper leaf is oblong as in the European *P. alpina*, to a North American state of which, I should have referred that variety, had its florets not been webbed, a character, which, though of trifling importance, (perhaps even less than the form of the ligula) does not exist in any of the numerous individuals of *P. alpina* that I have examined.

In British, and, indeed, in European examples of *P. alpina*, we are accustomed to see a small panicle of short and broad flowers, with a different aspect to that of *P. pratensis*; but North American individuals are subject to great variations in the size and outline of the panicle, so great that without connecting forms it would be very difficult to recognize them. Mr. Watson is equally persuaded with myself of the close affinity between this Antarctic *Poa* and *P. alpina*, though neither of us can adduce a tangible character beyond the webbed florets to separate the plants of Arctic and Antarctic America. I have not seen any of these species from the intervening Cordillera, a circumstance of little importance, the *Gramineæ* of these regions having been very much neglected by all collectors since the period of the travels of the illustrious Humboldt.

12. TRIODIA, *Br.*

1. Triodia *Kerguelensis*, Hook. fil.; parvula, dense cæspitosa, panicula simplici pauciflora scaberula, glumis inæqualibus acutis 3-nerviis 2-floris, flosculis breviter pedicellatis glumis inclusis basi nudis, paleis æquilongis inferiore dorso convexa obscure 5-nervi, superiore æquilonga bifida, foliis setaceis, culmis brevibus basi foliosis. (Tab. CXXXVIII. *sub nomine* Poæ).

Hab. Kerguelen's Land; rocky places, at an elevation of 300–1200 feet.

Gramen parvulum, dense cæspitosum, 2–4-uncinle. *Folia* glaberrima, brevia, recta sed vix rigida, setacea, marginibus involutis; *lamina* vix pollicaris *vagina* tumida longior; *ligula* ovata, subacuta. *Panicula* seu racemus simplex, 3–6 lin. longus, erectus; rachi flexuosa, scaberula. *Locustæ* pedunculatæ, 1½ lin. longæ, ovato-oblongæ, viridæ. *Glumæ* margine dorso nerviaque scaberulæ, concavæ, coriaceo-chartaceæ; superior longior, paulo angustior; inferior oblique acuminata. *Floscnli* glumas vix superantes, inferior subsessilis, superior breviter

pedicellatus. *Palea* æquilongæ; *inferior* 3-nervis, dorso basi sericeo, acuto v. obscure et oblique truncato; *superior* bicarinata, apice bifida. *Antheræ* parvæ, late oblongæ. *Caryopsis* ovoidea, glaberrima.

I was long doubtful whether to refer this curious little species to *Poa*, *Festuca*, or *Triodia*, to all which genera (like some other grasses) it has nearly equal affinity; to *Poa* in the form of the locustæ and florets, and to *Festuca* in the acute glumes and palea; but certainly most to *Triodia*, in habit, form of panicle, included florets and obscurely 3-dentate lower palea.

PLATE CXXXVIII. *Fig.* 1, portion of culm with vagina, base of lamina of leaf, and ligula; *fig.* 2, locusta; *fig.* 3, glume; *fig.* 4, floret; *fig.* 5, do with ripe caryopsis; *fig.* 6, caryopsis:—all *magnified*.

2. TRIODIA *Antarctica*, Hook. fil.; parvula, dense cæspitosa, glaberrima, panicula subsimplici coarctata, locustis breviter pedunculatis, glumis subæqualibus lanceolatis 3-floris, flosculis basi nudis paleis subæquantibus inferiore 5-nervi acuta obscure 3-dentata foliis basi longe membranaceis vaginantibus culmum fere æquantibus, lamina setacea. Festuca pusilla, *Banks et Sol. in Mus. Banks.*

HAB. Tierra del Fuego; *C. Darwin, Esq.* Rocks near the tops of the mountains of Hermite Island. *J. D. H.*

Culmi dense fastigiati, basi inclinati, valde foliosi, 4-pollicares. *Folia* plurima, erecta, substriata sed non rigida; *vagina* elongata, striata; *lamina* pollicaris, setacea, marginibus involutis; *ligula* ovata, acuminata. *Panicula* fere uncialis, simplex v. basi ramosa, erecta. *Locustæ* parvæ, 3-flores, glabriusculæ. *Glumæ* subæquales, flosculis breviores, lanceolatæ, concavæ, 3-nerves. *Flosculi* 2 superiores pedicellati, basi omnino nudi. *Palea* inferior late ovata, concava, apice breviter truncata et tridentata, dente intermedio paululum elongato, 5-nervis; nervis dorso obscure scabrulis; *superior* æquilonga, bicarinata, apice bifida. *Antheræ* parvæ, late oblongæ.

A peculiar species, allied to the last and to no other with which I am acquainted. The obliquely truncated apex of the lower palea in the *T. Korguelensis*, is here, as it were, exaggerated by that organ becoming decidedly though minutely trifid at the apex, as in the European *Triodia decumbens*, a genus to which both species ought from this circumstance be referred, and from their peculiar panicle and locustæ.

In habit the similarity between this plant and the former is very great, and apparent in the size, foliage, and locality they both affect, in their respective Islands; the differences in the details of the florets, are, on the other hand, sufficiently wide.

13. FESTUCA, *L.*

1. FESTUCA *Fuegiana*, Hook. fil.; erecta, elata, culmis basi præcipue foliosis scaberulis glaberrimisve, panicula effusa v. subcoarctata, glumis ovato-lanceolatis acuminatis subcarinatis, flosculis breviter pedicellatis basi aranecsis, superioribus viviparis, palea inferiore acuminata puberula 5-nervi nervis dorso sericeis superiore æquilonga bifida, foliis breviusculis subacutis marginibus involutis, ligula oblonga. (TAB. CXLI.)

Var. *a*, panicula contracta, culmo superne præcipue scabrido. Aira cæspitosa. *Banks et Sol. in Mus. Banks.* (*in part*).

Var. *β*. panicula effuse, magis vivipara, culmis glaberrimis. Poa alpina, *var.* vivipara, *Banks et Sol. in Mus. Banks.*

HAB. Strait of Magalhaens, Port Famine and Port Gregory, *Capt. King*. South part of Fuegia, *C. Darwin, Esq.*

Gramen erectum, 1- ad 2-pedale. *Culmi* dense fastigiati, basi valde foliosi, superne glaberrimi v. scabridi. *Folia* breviuscula, 3–4-uncialia, glaberrima, substricta sed non rigida, late linearia, acuta, marginibus involutis,

Reeve, imp.

Festuca Fuegiana, Hook fil.

vaginis striatis breviora; *ligula* late elongata, oblonga, apice fimbriata. *Panicula* 3–5 unc. longa, contracta v. effusa, ramis scaberulis. *Locustæ* 4–5 lin. longæ, viviparæ, pollicares et ultra. *Glumæ* chartaceæ, æquales, acuminatæ, superiore 3-nervi, subcarinata, carina scaberula. *Flosculi* sub 5, basi appresse araneosi, lana albida. *Palea* inferior flosculorum superiorum sæpissime in follium apice uncinatum ligula et vagina 5-nervi instructum desinens. *Antheræ* lineares. *Ovarium* late obovatum, supra basin contractum, basi squamulis acinaciformibus instructum. *Styli* brevissculi, ad basin plumosi.

A very handsome grass, which, perhaps, properly belongs to *Poa*, though the paleæ are so decidedly acuminate that I prefer retaining it under *Festuca*. The two varieties enumerated are not always constant to the characters assigned to them.

In general appearance this species resembles the British *Aira cæspitosa*, which is frequently similarly viviparous on the mountains, and the modifications the paleæ consequently undergo both in these and some other grasses, is a subject well worthy of study. When the inflorescence becomes foliaceous, the palea itself, which is distinctly 5-nerved is represented by the (equally 5-nerved) vagina of the leaf; the ligula of the latter holds the position of the membranous and often divided apex of such a palea as that of *Aira*, whilst the lamina answers to a dorsal awn; or rather, in the case of *Festuca Fuegiana*, to five awns (such as those of *Polypogon Chonoticus*, p. 374), united by parenchyma. That the *arista* of the lower palea in grasses *is* the produced mid-rib of a modified leaf, is perhaps generally admitted, but the exact relation of the apex of the palea to a ligula is not so evident in all aristate florets, as it is in those where the middle nerve is not percurrent but separates from the palea in the form of an awn. One apparent objection to this view may be adduced in the distinctly articulate awn of *Corynephorus* and *Stipa*, which may further be supposed favourable to M. Raspail's theory, that the mid-rib of the palea is an axis of developement in cohesion with the bracts; such articulations are, however, exceptional, and their position I am inclined to consider as indicating the point of union of the leaf with the vagina, where an angle is always observable. Viviparous grasses, too, would be expected to produce constantly additional organs from the portion of the transformed palea beyond the ligula, if M. Raspail's view were correct, but, this, on the contrary, is seldom the case. There is a similarity between the palea of a viviparous grass and the upper bract of each spikelet in some *Marisci*: for in them the dilated lower portion of the bract, or the true continuation of the rachis, somewhat resembles, without however being strictly analogous to, the lower palea of a locusta, and the uppermost flower is borne in a position, similar to the axle of the ligula on the leaf of a grass.

PLATE CXLI. *Fig.* 1, locusta; *fig.* 2, floret; *fig.* 3, ovary; *fig.* 4, squamula; *fig.* 5 and 6, viviparous portions of a spikelet; *fig.* 7, palea transformed into a leaf;—all *magnified*.

2. FESTUCA *Arundo*, Hook. fil. F. Alopecurus, *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 604. *Brong. in Duperrey Voy. Bot.* p. 32. Poa (?) Alopecurus, *Kunth, Eu. Plant.* vol. i. p. 256. Arundo Alopecurus, *Gaud. in Ann. Sc. Nat.* vol. v. p. 100., *et in Freyc. Voy. Bot.* p. 409.

Var. *β.* minor, foliis angustioribus culmo brevioribus.

Var. *γ.* pedalis, glumis et paleis latioribus brevioribusque.

Var. *δ.* culmo graciliore, panicula sub-nutante, flosculis sæpius basi parce lanatis.

HAB. Falkland Islands, all the varieties forming very large tufts; on the sea-sand abundant; *D'Urville, J.D.H.* Var. *γ.* Strait of Magalhaens; Port Gregory, *Capt. King.*

Next to the Tussock, the present is the largest grass in the Falkland Islands, though, like that plant, it is very variable in size. The largest specimens are three or even four feet high, the smaller scarcely one. Though a conspicuous object, its varieties are not always easily recognizable; for the most prominent characters of the typical state, which are the great size of the locustæ, and the narrow paleæ and glumes with slender attenuated apices, are quite fallacious. All my large specimens of var. *a* have either a minute turbinate ovarium or a small

caryopsis, and are never staminiferous; thus it is very possible that some of the varieties enumerated may be the males of this, the largest form.

M. Brongniart has suggested the propriety of erecting the present plant, together with the *F. Antarctica*, into a new genus, and they certainly are *more nearly allied* to one another than to any of their congeners; still I doubt the possibility of finding any character of generic value common to them both. They also resemble some South Brazilian and Patagonian grasses, as the *Poa lanuginosa*, Nees, and other undescribed species.

If I had seen only single specimens of the different varieties, I should certainly have considered three of them to be as many species; *but* a very large collection of individuals, from various parts of the Island, has convinced me, that neither the comparative length, breadth, or attenuation of the spices of the glumes and paleæ, nor the woolliness of the base of the florets, or length of the leaves, afford any grounds for a further subdivision; at least I have been unable to effect such, either when examining the fresh specimens, or, more lately, when comparing the dried ones. Dissimilar as the following plant appears, I am not at all positive of its claims to the rank of a separate species; for some of its characters may be due to the different locality it generally affects; and specimens of the var. δ. approaching the *F. Arundo* far too nearly.

Though a large and very handsome grass, the *Festuca Arundo* is so harsh and rigid as to be quite unpalateable to cattle; this is the more obvious from its often growing side by side with the nutritious Tussock, out of the same sand-heap.

3. Festuca *Antarctica*, Kunth, *Gram.* vol. i. p. 132. *En. Plant.* vol. 1. p. 408. Arundo Antarctica, *D'Urv. in Mém. Soc. Linn. Paris.* vol. iv. p. 602.

Var. α, culmo pedali, foliis strictis rigidis, panicula erecta, flosculis basi fasciculis pilorum instructis. Arundo Antarctica, *Brong. l. c.*

Var. β. culmo pedali et ultra, foliis elongatis flexuosis, panicula nutante, fasciculis pilorum rarissimis.

Var. γ. omnia varietatis β., sed flosculis omnino nudis.

Var. δ. habitu varietatis α. flosculisque varietatis γ.

Hab. Falkland Islands, most abundant; *vars.* α. and δ. on sandy shores; *vars.* β. and γ. in rocky places, both near the sea and upon the hills, sometimes also on the sandy shores.

Few botanists would, I think, venture to separate any of the varieties enumerated above from *F. Antarctica*, and very many others would unite all with the preceding species, and perhaps correctly. M. Kunth describes a specimen of this grass (received from D'Urville) as having the flosculi naked at the base, exactly as in my varieties γ. and δ. (*En. Plant. Suppl.* p. 340). The locustæ vary in my specimens, being from two- to four-flowered.

4. Festuca *arenaria*, Lamk., *Encycl.* vol. i. p. 191. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 602. *Brongniart, in Duperrey Voy. Bot.* p. 35. *Kunth, En. Plant.* vol. i. p. 408.

Hab. Strait of Magalhaens, *Commerson*; Port Famine, *Capt. King*; Falkland Islands, marshy and sandy places, *Gaudichaud, &c.*

The lower paleæ of this species are frequently notched on each side, below the apex, as in a genuine *Dactylis*, and in the following plant. Fuegian specimens are often viviparous.

5. Festuca *Cookii*, Hook. fil.; panicula elongata erecta contracta fastigiatim v. verticillatim ramosa, glumis subæqualibus ovato-lanceolatis acuminatis glaberrimis 4-floris superiore 3-nervi, flosculis basi nudiusculis palea inferiore pubertula 5-nervi dorso basi sericeo-barbata, apice acuminata integra v. 3-dentata, culmo diviso folioso basi radicante, foliis distichis culmum superantibus. (Tab. CXXXIX.)

Hab. Kerguelen's Land, abundant; *Anderson* (in Cook's Voyage), *J. D. H.*

Fitch del et lith.

Reeve imp

Festuca Cookii Hook fil.

Fitch. del et lith.

Reeve, imp.

Festuca purpurascens, Banks & Sol.

Gramen foliosum, 3 unc. ad bipedale. *Culmi* robusti, basi plurics divisi, prostrati v. repentes; pars repens validus, sæpe pedalis; pars erectus per totam longitudinem foliosus, compressus. *Folia* plurima, distiche inserta, elongata, coriacea sed non rigida; *vaginæ* apertæ, folio breviores, compressæ, striatæ; *ligula* brevis, fimbriata; *lamina* culmum paniculamque superans, plana v. dorso subcarinata, utrinque lævis, 2–4-lin. lata, gradatim in apicem acuminatam angustata. *Panicula* 2 ad 8 unc. longa, erecta v. paulo inclinata, $\frac{1}{2}$ unc. lata, subcontinua v. verticillatim interrupta. *Locustæ* late ovato-oblongæ, 3–4-floræ, sub 8-lin. longæ. *Glumæ* superior 3-nervis, inferiore 1-nervi longior, flosculis breviter pedicellatis brevior. *Palea* inferior ovato-lanceolata, acuminata, concava, vix carinata; nervo medio dorso superne ciliato, inferne barbato; flosculo superiore infimoque apice acuminato, integerrimo, duobus intermediis apicem versus utrinque uni-dentatis; *palea* superior inferiore $\frac{1}{4}$ brevior, bifida. *Antheræ* lineares. *Caryopsis* oblonga, cylindracea.

The commonest grass in Kerguelen's Land and a very valuable one, affording a rich and abundant fodder. The tendency in the palea to become toothed on each side towards the apex, and the distichous, long, and particularly rich foliage, show its affinity with the Tussock and with the *Festuca foliosa* of Lord Auckland's group, which chiefly differs from this in its larger panicle. These three grasses are certainly representatives of one another, and all typical of moist Insular climates; their northern analogues are evidently the *F. Donax*, Lowe, of Madeira, and *F. albida*, Lowe, of the same island.

PLATE CXXXIX. *Fig.* 1, locusta; *fig.* 2, floret; *fig.* 3, squamula; *fig.* 4, caryopsis:—all *magnified*.

§ 2. *Flosculis arista terminatis.*

6. FESTUCA *purpurascens*, Banks et Sol. MSS.; elata, panicula laxa ramis elongatis apicibus paucifloris, locustis oblongis multi- 8-floris, glumis trinerviis lanceolatis superiore ter majore, flosculis glabriusculis, paleis 5-nerviis apice 3-dentatis dente intermedio in aristam producto, foliis planis culmo brevioribus. (TAB. CXL.)

HAB. Strait of Magalhaens; Port Famine, *Capt. King*; Fuegia; Good Success Bay, *Banks and Solander*, *C. Darwin, Esq.*

Radix stolonifera. *Culmi* 2–4-pedales, graciles, erecti, glaberrimi, striati, politi, remote nodosi. *Folia* pauca, culmum vaginantia, patentia, flexuosa; *vaginæ* pedales, teretes, superne hiantes; *ligula* brevis, transversa; *lamina* plana, utrinque lævis, vagina brevior longiorve, gradatim supra medium acuminata. *Panicula* 6 unc. longa, laxa, inclinata; ramis paucis, elongatis, filiformibus, versus apices divisis. *Locustæ* fere $\frac{1}{2}$-unc. longæ. *Glumæ* flosculis pedicellatis basi nudis breviores. *Palea* inferior dorso convexa, superne præcipue pilosiuscula, superiorem bifidam paulo breviorem amplectans, nitida, purpureo-picta, 5-nervis, nervis scaberulis. *Squamulæ* 2, profunde bifidæ. *Ovarium* obovatum, superne pilosum; styli basi discreti.

A tall and handsome grass, allied to the South Brazilian *F. fimbriata*, Nees, in which the palæ are not awned, and the leaves are convolute. In general habit it resembles somewhat the European *F. elatior*.

PLATE CXL. *Fig.* 1, locusta; *fig.* 2, floret; *fig.* 3, pistil and squamulæ; *fig.* 4, squamulæ:—all *magnified*.

7. FESTUCA *duriuscula*, Linn., *Sp. Pl.* 108. *Engl. Bot.* t. 470.

HAB. Strait of Magalhaens; Port Famine, *Capt. King*.

Capt. King's specimens are nearly two feet high, in which respect only they differ from ordinary forms of those of British growth. The leaves are erect and involute.

8. FESTUCA *gracillima*, Hook. fil.; elata, glaberrima, panicula simplici elongata pauciflora inclinata, locustis majusculis pedunculis compressis longioribus multi-7–9-floris, glumis inæqualibus lineari-oblongis

late scarioso-marginatis superiore latiore 3-nervi, flosculis basi remotiusculis, palea inferiore obscure puberula in aristam brevem producta, culmis gracillimis folium lineari-filiforme involutum superantibus.

Hab. Strait of Magalhaens; Port Famine, *Capt. King*.

Radix fibrosa, nunc repens? *Culmi* 3-pedales, gracillimi, erecti, læves, nitidi. *Folia* 1–1½-pedalia. *Panicula* sub 5-unc. longa, 6–8-flora. *Locustæ* ½ ad ¾ pollicares. *Glumæ* latiusculæ, concavæ, non carinatæ, inferior 1-nervis, superior latior, 3-nervis. *Paleæ* lineares, inferior sursum puberula, arista breviuscula recta suctæ; superior æquilonga, bifida.—Species elongata, gracillima, priori simillima, sed elatior, foliis longioribus, locustis majoribus, glumis plurifloris latioribusque differt.

A very elegant species, allied to the former; but, judging from my specimens, distinct, especially in the form of its glumes; although in British examples of *F. rubra* that organ varies much in breadth and the locustæ in size.

9. Festuca *bromoides*, Linn., *Sp. Pl.* 109. *Engl. Bot.* t. 1412. *D'Urville, in Mém. Soc. Linn. Paris*, vol. iv. p. 601.

Hab. Falkland Islands, found only near the settlement, *D'Urville, J. D. H.*

Apparently identical with the European plant, and most probably introduced.

10. Festuca *Magellanica*, Lamk., *Illust.* vol. i. p. 119. *Encycl.* vol. ii. p. 461. *D'Urville, in Mém. Soc. Linn. Paris*, vol. iv. p. 601. *Brong. in Duperrey, Voy. Bot.* p. 38. *Kunth, En. Plant.* vol. i. p. 396.

Var. *β.* culmo elongato, foliis glaberrimis.

Hab. Strait of Magalhaens, *Commerson*; Falkland Islands, on rocks near the sea, *D'Urville, J. D. H.* Var. *β.* Port Famine, *Capt. King*.

The var. *β.*, from Port Famine, is almost identical with Austrian specimens of *F. pallens*, Host., and it comes very near some British states of *F. duriuscula*, apparently differing chiefly by the membranous margins of the sheaths of the leaves. Falkland Island specimens vary considerably in stature and in the size of their locustæ; the foliage is very rigid in all, though more or less pubescent in different specimens.

11. Festuca *erecta*, D'Urville, *in Mém. Soc. Linn. Paris*, vol. iv. p. 601. *Brongniart, in Duperrey Voy. Bot.* p. 37. t. 7. *Kunth, En. Plant.* vol. i. p. 398.

Hab. Tierra del Fuego; Hermite Island, *J. D. H.*; Falkland Islands, *D'Urville, J. D. H.*; Kerguelen's Land, *R. M'Cormick, Esq.*

Variable in the comparative length of the leaves and stem, as also in size, but otherwise a well-marked species.

14. DACTYLIS, *L.*

1. Dactylis *cæspitosa*, Forst., *in Comm. Goett.* vol. ix. p. 22. *Willd. Sp. Pl.* vol. i. p. 407. *Hook. fil. in Lond. Journ. of Bot.* vol. ii. p. 298. t. 9 and 10. Festuca cæspitosa, *Roem. et Sch. Syst. Veg.* vol. ii. p. 732. *Kunth, En. Plant.* vol. i. p. 408. F. flabellata, *Lamk. Encycl.* vol. ii. p. 462. *Gaud. in Ann. Sc. Nat.* vol. v. p. 100, *et in Freyc. Voy. Bot.* p. 409. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 603. *Brongniart in Duperrey Voy. Bot.* p. 36. "Glayeux," *Pernetty, Voy.* vol. i. p. 343. (Tab. CXXXVI.—CXXXVII.)

Hab. Strait of Magalhaens, *Commerson*; and throughout Fuegia; Staten Land, *Forster*; Hermite Island, Cape Horn, *J. D. H.*; Falkland Islands, most abundant, *Gaudichaud*, and all subsequent voyagers.

Though much has lately been written in the 'Journal of Botany' upon this plant, the famous Tussock Grass of the Falkland Islands, it appears advisable to sum up here the principal facts connected with its history.

Commerson was doubtless the discoverer of it in the Strait of Magalhaens, in 1767, and it has been gathered in Fuegia by several succeeding voyagers; but as it nowhere forms so conspicuous a feature as in the Falkland Islands, it is most appropriately considered in reference to them alone.

A French colony was established on the Falklands, by Admiral Bougainville, in 1766, when cattle and horses were landed, which, no doubt, soon manifested a predilection for this noble grass. Pernetty, the historiographer of the Voyage, in describing the remarkable plants of those Islands, alludes particularly to it under the name of "Glayeul"; but it was not until the recent colonization of the Falklands by the British that attention was particularly directed to the Tussock, in consequence of accounts forwarded to the Colonial Office by Governor Moody, and to the Admiralty by the Antarctic Expedition.

The peculiar mode of growth of *Dactylis cæspitosa* enables it to thrive in pure sand, and near the sea, where it has the benefit of an atmosphere loaded with moisture, of soil enriched by decaying sea-weeds, of manure, which is composed in the Falkland Islands of an abundant supply of animal matter in the form of Guano, and of the excrements of various birds, who deposit their eggs, rear their young, and find a habitation amongst the groves of Tussock. Its general locality is on the edges of those peat-bogs which approach the shore, when it contributes considerably to the formation of peat. Though not universal along the coast of these Islands, the quantity is still prodigious, for it is always a gregarious grass, extending in patches sometimes for nearly a mile, but seldom seen except within the influence of the sea air. This predilection for the ocean does not arise from an incapacity to grow and thrive except close to the salt water, but because other plants, not suited to the sea-shore, already cover the ground in more inland localities, and prevail over it: I have seen the Tussock on inaccessible cliffs in the interior, having been brought there by the birds and afterwards manured by them; and, when cultivated, it thrives both in the Falklands and in England, far from the sea.

I know of no grass likely to yield nearly so great an amount of nourishment as the Tussock, when thoroughly established; in proof of which I quote my friend Governor Moody's printed report, for the truth of which I can vouch, both from my own experience and from his having kindly given me ample means for judging of the correctness of his interesting and useful observations, when drawing up the report from which the following extract is made.

"During several long rides into the country I have always found the Tussock flourishing most vigorously in spots exposed to the sea, and on soil unfit for any other plant, viz. the rankest peat-bog, black or red. It is wonderful to observe the beaten foot-paths of the wild cattle and horses, marked like a foot-track across fields in England, extending for miles over barren moor-land, but always terminating in some point or peninsula covered with this favourite fodder; amid which, one is almost certain to meet with solitary old bulls, or perhaps a herd of cattle; very likely, a troop of wild horses, just trotting off as they scent the coming stranger from afar. To cultivate the Tussock grass I should recommend that its seeds be sown in patches, just below the surface of the earth and at distances of about two feet apart; it must afterwards be weeded out, for it grows very luxuriantly, frequently attaining a height of six or seven feet. It should not be grazed, but cut or reaped in bundles. If cut, it quickly shoots again; but is much injured by grazing; for all animals, especially pigs, tear it up to get at the sweet nutty-flavoured roots. I have not tried how it would be relished if made into hay, but cattle will eat the dry thatch off the roof of a house in winter; their preference to Tussock grass being so great that they scent it a considerable distance and use every effort to get at it. Some bundles, which had been stacked in the yard at the back of Government House, were quickly detected, and the cattle in the village made, every night, repeated attempts to reach them, which occasioned great trouble to the sentry on duty."

Since the above was written, the Tussock has been used abundantly when made into hay, being preferred by cattle even to the green state of any of the other excellent grasses in the Falklands. Governor Moody informs me that in his garden it grows rapidly and improves by cutting.

There is, however, one draw-back to the value of the Tussock; it is a perennial grass, of slow growth, and some disappointment has already been experienced in England from this cause. Each Tussock consists of many hundreds of culms, springing together from a mass of roots, which have required a long series of years to attain their great and productive size. Our cultivated specimens in the Royal Gardens of Kew, now nearly three years old, are in a fair way of becoming good Tussocks; for the quantity of stems from each root, the produce of one seed, is incalculably more than any other grass throws up, and these are already forming a ball of root-fibres which in time will form a mound; but this ball, now scarcely six inches across and not two in height, must have grown to six or eight feet high, with a diameter of three or four feet; instead of forty culms there must be four hundred; and the leaves, now three feet long, must attain seven; ere the Tussock of England can compete with its parent in the Falklands. Though, however, the stoles (if I may so call the matted roots of this grass) in the most vigorous native specimens attain a height of seven feet, it is certain that they are very productive before they have reached two or three. By the time the leaves have gained their great size, the bases of the culms are nearly as broad as the thumb, and when pulled out young, they yield an inch or two of a soft, white, and sweet substance, of the flavour of a nut, and so nutritious, that two American sealers, who deserted a vessel in an unfrequented part of the Falklands, subsisted on little else for fourteen months.

Again, the Tussock-grass field, when fully established, must not be grazed indiscriminately by cattle. These creatures and the pigs have already diminished its abundance in the Falklands; for, after devouring the foliage, they eat down the stumps of the culms, greedily following them into the heart of the mass of roots from which they spring, for the sake of the white core just described; the rain-water lodges in the cavity thus formed, and decay so surely follows, that I have seen nearly half a mile of Tussock-grass plants entirely destroyed by no other means.

Although in the Falklands this plant will grow on pure sand near the sea, and there reach as great a size as on any other soil, it is not likely to do so in the drier climate of Britain, where the absence of an equally humid atmosphere must be artificially remedied. A wet, light, peaty soil has in England been found to favour its growth; sea-weed manure might probably be added with advantage, and certainly guano. Slow its progress assuredly is, but it may be hastened by such stimulants. In the mean time the cultivator has no just cause for complaint; the plant is already increasing unusually at the base, and thence sending up many more culms than other grasses, though, springing from one small base, they do not make such a show, but form a compact mass of living roots which in the case of other Gramineæ would spread over ten times the area that this occupies, and they annually increase in vigour and productiveness. And, lastly, it must be borne in mind that the farmer here obtains an enormous crop from a very small surface. Each great Tussock is the produce of one seed and is an isolated individual plant, which, though standing upon perhaps only two square yards of ground, yields annually a produce equal to that of a much greater surface of land, if cropped with hay or clover. The number of seeds required to stock an acre in Tussock and one in grass is in the proportion of tens to thousands; and we may be well content to know that the number of months required to ensure a profitable return is not in the same ratio.

There are few plants which from perfect obscurity have become objects of such interest as this grass. The Tussock in its native state seems of almost no service in the animal economy. A little insect, and only one that I observed, depends on it for sustenance; and a bird, no bigger than the sparrow, robs *it of its* seeds; a few sea-fowl build amongst the shelter of its leaves: penguins and petrel seek hiding-places amongst the roots, because they are soft and easily penetrated, and Sea-lions cower beneath its luxuriant foliage: still, except the insect, I know no animal or plant whose extinction could follow the absence of this, the largest vegetable production in the Falklands, which does not even support a parasitical fungus. These same sea-birds breed and burrow where no Tussock grows; rocks elsewhere suit the Sea-lion's habits equally well; and the sparrow, which subsists on other food eleven months of the year, could surely make shift without this for a twelfth. Certain it is, that the Tussock might yet be unknown and unprized amongst plants, if cattle had not been introduced to its locality by man;

who thus became, first the injurer, and then the protector and propagator of the existence of this noble grass; for the herbivorous quadrupeds which he carried to the Falklands and left there, were surely extirpating the Tussock, when man returned, and, by protecting, perpetuating, and transporting it to other countries, he has widely dispersed it. It appears singular that so striking a grass should abound where there is no native herbivorous animal to profit by its luxuriance; but it is no less certain that had not civilization interfered, the Tussock might have waved its green leaves undisturbed over the waters of the stormy Antarctic Ocean, for ever perhaps, or until some fish, fowl, or seal, should be so far tempted by the luxuriance of the foliage as to transgress the laws of nature, and to adopt its organs to the digestion and enjoyment of this long-neglected gift of a bounteous Providence.

It must appear strange to all who know grasses only in the pastures of England, that the patches of Tussock resemble nothing so much as groves of small low Palm-trees! This similarity arises from the matted roots of the individual plants springing in cylindrical masses, always separated down to the very base, and throwing out a waving head of foliage from each summit. Bogs and damp woods in Britain very frequently produce a Sedge (*Carex paniculata*), whose mode of growth is, on a small scale, identical with that of the Tussock-Grass, and to which the name of Tussock is applied. I have seen them two to three feet above the ground, in South Wales; and if they were higher, larger, and placed closer together, the general resemblance would be complete. The effect in walking through a large Tussock grove is very singular, from the uniformity in height of these masses, and the narrow spaces left between them, which form an effectual labyrinth; leaves and sky are all that can be seen overhead, and their curious boles of roots and decayed vegetable matter on both sides, before and behind; except now and then, where a penguin peeps forth from his hole, or the traveller stumbles over a huge Sea-lion, stretched along the ground, blocking up his path.

PLATE CXXXVI.—CXXXVII. *Fig.* 1, locusta; *fig.* 2, floret; *fig.* 3, squamulæ, stamens, and pistil; *fig.* 4, squamula; *fig.* 5, pollen; *fig.* 6, caryopsis:—all *magnified*.

15. CATABROSA, *Beauv.*

1. CATABROSA *Magellanica*, Hook. fil.; glaberrima, panicula elongata laxe ramosa, ramis apice floriferis elongatis, glumis inæqualibus apice crosis 4–6-floris superiore majore 3-nervi, palea inferiore ovato-oblonga obtusa 5-nervi glaberrima vix costata, culmo erecto foliorum vaginis tecto, foliorum lamina involuta vagina breviore.

HAB. Strait of Magalhaens; Port Famine, *Capt. King*.

Gramen pedale, erectum, glaberrimum. *Culmi* basi prostrati, divisi. *Foliorum vagina* latiuscula, 3–6 unc. longa, striata, hians; *ligula* ovata, acuta; *lamina* 2–3-uncialis, anguste lineari-subulata, superne scaberula, marginibus involutis. *Panicula* 5–7 unc. longa, erecta; ramis gracilibus verticillatis v. fastigiatis, inferioribus 4 unc. longis, filiformibus, glaberrimis, flexuosis, apices versus divisis et floriferis. *Locustæ* ¼ unc. longæ, sub 4-floræ. *Gluma* inferior lanceolata, acuta v. truncato-erosa; superiore oblongo-lanceolata 3-nervi obtusa erosa ¼ breviore. *Flosculi* basi dissiti, glaberrimi, cylindracei. *Palea* inferior oblongo-ovata, obtusa, sub-erosa, obscure 5-nervis, ecostata, marginibus subciliatis, superior brevior, apice bidentata. *Antheræ* parvæ, late oblongæ.

Quite a distinct species, and differing from the typical plants of the genus in having many florets contained in each locusta.

16. BROMUS, *L.*

1. BROMUS *pictus*, Hook. fil.; strictus, erectus, simplex, puberulus, panicula simplici, locustis sub 4 magnis pedunculis longioribus, glumis lineari-oblongis subacutis medio nervosis flosculisque purpureo-pictis

sub 5-floris, palea inferiore lineari-ovata obtusa infra apicem arista brevi capillacea instructa 7-nervi inferne sericeo-puberula.

Hab. Strait of Magalhaens; Port Gregory, *Capt. King.*

Gramen pedale. *Culmus* simplex, basi geniculatus, erectus, gracilis, strictus, puberulus. *Folia* pauca, culmo breviora; *vagina* striata; *ligula* ovata, lacera; *lamina* vagina brevior, pilosa, involuta. *Panicula* 2 unc. longa. *Locustæ* fere pollicares, ½ unc. latæ. *Flosculi* nervosi, superne glaberrimi, nitidi, inferne dorso sericei; *arista* ½ flosculi æquans, scaberula. *Palea* superior inferiori æquilonga, sed ½ angustior.

A very distinct little species, only found in the eastern parts of the Strait of Magalhaens, and more characteristic of the grassy plains of Patagonia than of an Antarctic vegetation.

17. ELYMUS, *L.*

1. Elymus *Antarcticus*, Hook. fil.; erectus, glaberrimus, panicula spiciformi lineari-oblonga, spiculis binis collateralibus 2-floris, glumis subæqualibus lanceolatis aristato-acuminatis integris v. bifidis nervosis, flosculis brevissime pedicellatis, palea inferiore lanceolata in aristam gluma breviorem desinente 5-nervi superne pubertula, superiore brevissime bidentata, foliis planis vaginis brevioribus.

Hab. Strait of Magalhaens; Port Famine, *Capt. King.*

Culmi erecti, bipedales, subvalidi, foliosi, glaberrimi. *Folia* coriacea sed non rigida, culmo breviora; *vagina* teres, striata, 5 unc. longa; *ligula* brevissima; *lamina* lineari-subulata, utrinque lævis, basi plana, superne marginibus involutis, gradatim acuminata, 3–4 unc. longa. *Panicula* 3–4-uncialis, stricta, erecta, continua, ½ unc. lata. *Locustæ* erectæ, imbricatæ, appressæ, scaberulæ. *Glumæ* liberæ, ad basin cujusvis articulationis quaternæ, quarum exterior lateris unici sæpe ad medium fissa evadit, fere ½ unc. longæ, aristatæ. *Flosculi* cum aristis ⅔ unc. longi, inferior vix, superior longius, pedicellatus; *arista* paleis paulo brevior.

This a good deal resembles a Chilian species, which possesses longer aristæ to the glumes and palea, and is otherwise different. One glume out of the four at each articulation is often bifid, this is always the outer, and all such are on one side of the panicle only. The general appearance is not dissimilar to that of *Elymus Europæus*, from which the present species may be distinguished at once by the glumes being free to the base.

18. HORDEUM, *L.*

1. Hordeum *jubatum*, Linn., *Sp. Pl.* 126. *Kunth, En. Plant.* vol. i. p. 457.

Hab. Strait of Magalhaens; Port Famine, *Capt. King.*

North American specimens do not appear to differ from the Magellanic, or from others gathered at Cape Fairweather. I find the sheaths of the (old) leaves sometimes pilose, whence it seems very probable that the Chilian *H. carnosum*, Presl, is only a state of this plant which varies a good deal in size, in the stoutness of the culm, and length of its panicle. *H. jubatum* had been considered as confined to North America, where it ranges from the Missouri to the Saskatchewan, and from Boston to the Colombia river.

2. Hordeum *pubiflorum*, Hook. fil.; spicis oblongis, glumis æquilongis omnibus setaceis basi pubescentibus superne scabridis, flosculis lateralibus neutris, intermedio basi setula aucto, palea inferiore scabrido-palois lanceolata arista glumis æquilonga terminata, foliis caulinis longe vaginantibus radicalibus subsetaceis.

Hab. Strait of Magalhaens; Port Famine, *Capt. King.*

Radix fibrosa, subrepens. *Culmi* 8–10 unc. alti, basi inclinati, glaberrimi. *Folia* radicalia, pauca; *vagina* uncialis glaberrima v. obscure pilosa; *lamina* subulata, involuta, 2-pollicaris; caulinorum vaginæ elongatæ, tumidæ, striatæ; lamina brevissima, subulata. *Spica* 1½-uncialis, fusco-purpurea. *Glumæ* ¾-unciales, recurvæ, basi flosculique pube scabrida, pilis brevibus intermixtis vestita.

Very distinct from the former (than which it is a good deal smaller) and from any other species, and may be recognized by the pubescence of the florets; its general appearance resembles the European *H. maritimum*.

19. TRITICUM, *L.*

1. Triticum *repens*, Linn., *Sp. Pl.* 128. *Engl. Bot.* t. 909.

Var. palea superiore semper pubescente floribusque plerumque majoribus. T. repens, *var.* pungens, *Brongniart in Duperrey, Voy. Bot.* p. 57. T. glaucum, *Lamk.* (?) *D'Urville in Mém. Soc. Linn. Paris*, vol. iv. p. 601.

Sub-var. 1, spiculis majoribus ⅔-uncialibus, glumis paleisque angustioribus, palea inferiore breviter aristata apice trifida v. integra.

Sub-var. 2, spiculis majoribus, glumis paleisque latioribus, palea inferiore apice mucronata subaristata integra v. obscure trifida.

Sub-var. 3, spiculis apice majoribus, palea inferiore acuminata pungente trifida.

Sub-var. 4, spiculis minoribus, glumis angustioribus, palea inferiore apice 3-dentata breviter aristata v. mutica.

Sub-var. 5, spiculis minoribus, glumis latioribus, palea inferiore apice 3-dentata nunquam aristata.

Hab. Strait of Magalhaens; Port Famine, *Capt. King* (sub-vars. 4 and 5); South Fuegia, Good Success Bay, and Hermite Island, *Banks and Solander, C. Darwin, Esq., J. D. H.* (sub-vars. 2 and 3); Falkland Islands, abundant, *D'Urville, &c.* (sub-vars. 1, 2, and 3).

A very variable plant, and all the more perplexing from some of the larger varieties differing more in appearance than they do in reality from the common European *T. repens*. The lower palea is generally, but not constantly tridentate at the apex, with the middle tooth sometimes produced into a short awn; it is, however, always hairy, as may be seen in Siberian, Arctic American, and Rocky Mountain plants, which latter, indeed, are sometimes villous. The North American specimens are generally larger than the European. This species is also a native of Cape Fairweather on the Patagonian coast, and exceedingly abundant throughout Fuegia and the Falkland Islands.

20. LOLIUM, *L.*

1. Lolium *perenne*, Linn., *Sp. Pl.* 122. *D'Urville, in Mém. Soc. Linn. Paris*, vol. iv. p. 601. *Brongn. in Duperrey, Voy. Bot.* p. 57.

Hab. Falkland Islands, on the sandy sea-shores, frequent; *D'Urville.*

The habitat assigned by D'Urville to this plant renders its being indigenous very probable.

FILICES, *Juss.*

1. HYMENOPHYLLUM, *Sw.*

1. Hymenophyllum *cruentum*, Cav., *Præl.* 1801, n. 684. *Swartz, Syn. Fil.* p. 145. *Hook. Sp. Fil.* vol. i. p. 87. t. xxxi. A.

Hab. Chonos Archipelago; *C. Darwin, Esq.*

Even amongst the Ferns we have much peculiarity attending the Flora of S.W. Chili and Fuegia. I have elsewhere alluded to the botanical division of that line of coast into a northern and southern portion, differing specifically in their productions, but not generically to any very great amount. These two divisions are, 1st, the Valdivian or Chilotian, which stretches from Concepcion to Cape Tres Montes; and, 2nd, the Magellanic or Fuegian, commencing at Cape Tres Montes and terminating at Cape Horn. From the lower latitude and consequently higher temperature of the northern of these two countries, and from its greater surface, containing also mountains that reach the limits of perpetual snow, its Flora is by very far the richest, including a larger proportion of the Fuegian plants than Fuegia does of the Chilotian. There are also many species, which, though conspicuous in the southern Flora, are either unknown even on the Alps of the northern, or appear there only under very different aspects.

Many more species common to both these divisions, Fuegian plants especially, prevail through the whole line of coast, than its great extent would lead us to expect. This proceeds from a mutual interchange of individuals between two countries whose Floras may be supposed to have been originally quite distinct. The inoculation of the Floras is most conspicuous at Cape Tres Montes and the Chonos Archipelago, and is not accompanied by any tendency in those species, which there come into juxta-position, to change, each into that which represents it in the other. The union or mingling is complete, but there is no blending of two species, no obliteration of specific characters, nothing to indicate either that the peculiar plants of one country have originated from what pre-existed in the other under a different form; or, still less, that all have sprung from one common source, lower in the scale of organization.

2. Hymenophyllum *pectinatum*, Cav., *Præl.* 1801, n. 687. *Swartz, Syn. Fil.* p. 146. *Willd. Sp. Pl.* vol. v. p. 425. *Hook. Sp. Fil.* vol. i. p. 96. t. 34. D.

Hab. Chonos Archipelago, *C. Darwin, Esq.*

3. Hymenophyllum *Wilsoni*, Hook., *Brit. Flor.* ed. 5. p. 446. *Wilson, in Engl. Bot. Suppl.* t. 2686.

Var. γ. *Hook. Sp. Fil.* vol. i. p. 96.

Hab. South part of Tierra del Fuego, *C. Darwin, Esq.*; Hermite Island, Cape Horn, *J. D. H.* Falkland Islands, quartz rocks on the hills, *J. D. H.*

Found in all the four quarters of the globe, also in Australia and New Zealand.

4. Hymenophyllum *Chiloense*, Hook., *Sp. Fil.* vol. i. p. 90. t. 32. B.

Hab. Chonos Archipelago; *C. Darwin, Esq.*

The specimen in Mr. Darwin's herbarium is very small, but I think referable to this species; certainly to no other published one.

5. Hymenophyllum *caudiculatum*, Martius, *Pl. Crypt. Bras.* p. 102. t. 67.

Var. β. *Hook. Sp. Fil.* vol. i. p. 102.

Hab. Chonos Archipelago; *C. Darwin, Esq.*

6. Hymenophyllum *tortuosum*, Banks et Sol., *MSS. Hook. et Grev. Ic. Fil.* t. 129. *Hook. Sp. Fil.* vol. i. p. 99.

Hab. Chonos Archipelago, *C. Darwin, Esq.*; and throughout Fuegia, *Banks and Solander, &c.*

One of the most common Antarctic American ferns, from the latitude of Valdivia to Cape Horn.

7. HYMENOPHYLLUM *secundum*, Hook. et Grev., *Ic. Fil.* t. 133. *Hook. Sp. Fil.* vol. i. p. 100.

HAB. Staten Land, *Menzies*; Hermite Island, Cape Horn, *J. D. H.*

Decidedly the most Antarctic of Ferns, occurring only at the very extremity of the American continent, where it is tolerably abundant in the woods.

8. HYMENOPHYLLUM *rarum*, Brown, *Prodr.* p. 159. *Fl. Antarct.* p. 105. H. semibivalve, *Hook. et Grev. Ic. Fil.* t. 83.

Var. β. *Hook. Sp. Fil. l. c.* H. imbricatum, *Colenso, in Tasm. Phil. Journ.* vol. ii. p. 187.

HAB. Var. β. South part of Tierra del Fuego, *C. Darwin, Esq.*; Hermite Island, Cape Horn, *J. D. H.*

A species exhibiting a singular predilection for those insular and peninsular localities, which terminate the continents in the Southern Ocean. Thus it occurs only at the very southern extremity of America and Africa; at Ceylon, which is nearly the southernmost land of the vast Indian empire; in Tasmania, which is an analogous position in Australasia; and in New Zealand and Lord Auckland's group, which bear the same geographical relation to Polynesia. As it also inhabits Bourbon and the Mauritius, it appears to exist all round the world, resting on the highest southern lands of each longitude.

2. TRICHOMANES, *Sm.*

1. TRICHOMANES *flabellatum*, Bory, *in Duperrey Voy. Bot. Crypt.* p. 281. *Hook. Sp. Fil.* vol. i. p. 119. T. flabellula, *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 597.

HAB. Falkland Islands; *Gaudichaud, D'Urville.*

A plant which I have never seen, though I diligently sought for it in the Falkland Islands. It is remarkable that both the French Naturalists who met with it, should have failed to notice the *Hymenophyllum Wilsoni*, which is sufficiently abundant, and generally accompanies the following species.

2. TRICHOMANES *cæspitosum*, Hook., *Sp. Fil.* vol. i. p. 132. t. 40 B. Hymenophyllum cæspitosum, *Gaud. in Ann. Sc. Nat.* vol. v. p. 908, *et in Freyc. Voy. Bot.* p. 374. t. 5. f. 2. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 597.

HAB. Southern parts of Fuegia; Staten Land, *Menzies*; Hermite Island, Cape Horn, abundant on trunks of trees, *J. D. H.*; Falkland Islands, clothing the quartz rocks on the hills; *Gaudichaud, D'Urville, J. D. H.*

This singular little species was discovered by the lamented Menzies, in Staten Land. Cape Horn is its southern limit, and Chiloe its northern. It has been probably overlooked in the intervening latitudes.

3. CISTOPTERIS, *Bernh.*

1. CISTOPTERIS *fragilis*, Bernh., *New Journ. Bot.* vol. ii. p. 27. *Engl. Bot.* t. 1587. *Hook. Sp. Fil.* vol. i. p. 197.

HAB. Strait of Magalhaens; Port Famine, *Capt. King*; Falkland Islands (West Island?), *Capt. Sulivan.*

One of the most extensively diffused of all vegetables, or even Ferns, though avoiding such hot and equable climates as the low lands of the Tropics. In America, it ranges along the Cordillera, from the Arctic Sea and Greenland to the Strait of Magalhaens; in Europe, from Iceland and Lapland to the Mediterranean; in Asia, between Kamtschatka and the Himalaya Mountains; but in Africa it is confined to the Canary Islands and the Cape

of Good Hope. Its aversion to damp or uniform heat is conspicuously displayed in its not being a native of New Zealand or Fuegia proper on the one hand, or of India or tropical Africa on the other.

4. ASPIDIUM, *L.*

1. Aspidium (Polystichum) *Mohrioides*, Bory, *in Mém. Soc. Linn. Paris*, vol. iv. p. 597, *et in Duperrey, Voy. Bot. Crypt.* p. 267. t. 35. f. 1. (Tab. CXLIX.)

Hab. Strait of Magalhaens; Port Famine, *Capt. King*; Falkland Islands, *D'Urville, &c.*

The Magellanic specimens are larger, and have longer and more laxly imbricating pinnæ, than those from the Falkland Islands; which are characteristic of a climate less favourable to Ferns.

Plate CXLIX. *Fig.* 1, fertile pinna; *fig.* 2, sterile ditto; *fig.* 3, sorus and involucre:—*magnified.*

2. Aspidium (Polystichum) *coriaceum*, Swartz, *Syn. Fil.* p. 57.

Hab. Chonos Archipelago; *C. Darwin, Esq.*

A species apparently impatient of cold, for though inhabiting the damp west coast of Chili, as far south as the Chonos Archipelago and the dry climate of Patagonia, reaching there the latitude of Port St. Elena, it neither enters the Strait of Magalhaens, nor occurs in the Falkland Islands or Fuegia. It is almost universally diffused throughout the Tropics, and the temperate regions of the southern hemisphere.

3. Aspidium (Polystichum) *vestitum*, Swartz, *Syn. Fil.* p. 53. Polypodium, *Forster, Prodr.* n. 445.

Var. pinnulis profundius sectis apicibus acutis.

Hab. Var. Tierra del Fuego, south part, *C. Darwin, Esq.*

The only specimen which I have seen is imperfect, but appears merely a variety of the *A. vestitum*, with rather narrower and more deeply cut pinnules, which are acute, but not pungent or spinulose; the segments of the pinnules also are narrower, and the whole frond smaller. In other respects, and particularly in the clothing of the stipes, rachis, &c., it exhibits all the characters of the species I have referred it to, which is a native of Juan Fernandez and Chiloe. I am not prepared to say how far all may be distinct from the British *A. aculeatum*, the incisions of the broader mucronate pinnules in the European plant are closer, and all aculeate, which is not the case with the typical states of *A. vestitum*; and the clothing, too, is different.

This species is represented by the *A. venustum*, Homb. and Jacq., in Lord Auckland's group, and by *A. proliferum*, Br., in Tasmania.

5. ASPLENIUM, *L.*

1. Asplenium *Magellanicum*, Kaulf. *En. Fil.* p. 175. *Hook. et Grev. Ic. Fil.* t. 180.

Hab. Strait of Magalhaens, *Commerson*; Port Famine, *Capt. King*; Hermite Island, Cape Horn, *J. D. H.*

A very pretty and distinct little species; probably not uncommon between the latitudes of Concepcion and Cape Horn, on the west coast of South America. It has a very nearly allied representative in New Zealand; and another, the *Asplenium laxum*, Br., in Tasmania.

6. LOMARIA, *Willd.*

1. Lomaria *alpina*; Stegania, *Brown, Prodr.* p. 152. S. alpina, *β.* latiuscula, *Bory, fid. D'Urville, in Mém. Soc. Linn. Paris*, vol. iv. p. 597. Lomaria polypodioides, *Gaud. in Ann. Sc. Nat.* vol. v. p. 908.

Fitch, del. et lith.

Reeve, imp.

Aspidium mohrioides, B. Orv.

Fitch, del et lith.

Reeve, imp

Lomaria alpina, Br.

et in Freyc. Voy. Bot. p. 374. L. australis, *Kunze, Coll. Plant. Poeppig*, p. 57 (*fid. sp. in Herb. Hook.*). L. decurrens, *Kunze, MSS.* L. blechnoides, *Bory* (?), *in Dupetrey, Voy. Bot. Crypt.* p. 273. L. Sellowiana, *Prest, in Herb. Reg. Berol.* p. 100 (*fid. sp. in Herb. Hook.*). L. Antarctica, *Carmichael, in Linn. Soc. Trans.* vol. xii. p. 512. L. linearis, *Colenso, in Tasman. Phil. Journ.* vol. ii. p. 176. Polypodium Pinna-marina, *Poiret, Encycl.* (Tab. CL.)

Hab. South Chili, Fuegia, and the Falkland Islands, most abundant; Kerguelen's Land, very scarce, *J. D. H.*

One of the commonest Ferns between the latitudes of Concepcion and Cape Horn on the west coast of South America, and also in the Falkland Islands, often covering the ground for many yards. It has also been collected in South Brazil by Sellow, and in Tristan d'Acunha, Kerguelen's Land, New Zealand, and in Tasmania; throughout all which countries it retains its characters very markedly, and is altogether a most distinct species. The *Blechnum boreale* is evidently its representative in the northern hemisphere, and is very similar in size, form, and habit, though abundantly distinct in the nature of its involucre.

Plate CL. *Fig.* 1, portion of sterile pinnæ; *fig.* 2, fertile pinna; *fig.* 3, transverse section of the same.

2. Lomaria *Magellanica*, Desvaux, *in Mag. Nat. Berlin*, 1811, p. 330, *et in Mém. Soc. Linn. Paris*, vol. vi. p. 289. L. Magellanica, *β.* angustiseta, *Bory, in Mém. Soc. Linn. Paris*, vol. iv. p. 597. L. setigera, *Gaud. in Ann. Sc. Nat.* vol. v. p. 98, *et in Freyc. Voy. Bot.* p. 130. L. robusta, *Carm. in Trans. Linn. Soc.* vol. xii. p. 512. L. zamioides, *Gardner, MSS. in Herb. Hook.* Pteris palmæformis, *Petit Thouars, Flore de Tristan d'Acunha*, p. 30. "Ceternch," *Pernetty, Voy.* vol. ii. p. 56.

Hab. South Chili, Fuegia, and the Falkland Islands, very abundant.

This species is more confined in longitude but has a much wider range in latitude than *L. alpina*. I have examined what appears to be the same from British Guiana (possibly a distinct species), from Brazil, and La Plata, on the east coast of South America; and from Peru, Juan Fernandez, and Chili, on the west; it also inhabits Tristan d'Acunha. Its New Holland representative is the *L. procera*, Br.

Mr. Gardner's name of *zamioides* is peculiarly applicable both to his Brazilian and my Falkland Island specimens, they singularly resemble a *Zamia* in habit and general appearance.

7. GRAMMITIS, *Sw.*

1. Grammitis *australis*, Brown, *Prodr.* p. 146. *Fl. Ant.* p. 111.

Hab. Strait of Magalhaens; Port Famine, *Capt. King*. Hermite Island, Cape Horn, abundant in the woods and on the rocks upon hills, *J. D. H.*

This, again, is a Fern of the Southern Ocean, being found in Tasmania, New Zealand, Lord Auckland's group and Campbell's Island, the west coast of South America, from Cape Horn probably all the way north to Lima, and on Tristan d'Acunha. I have seen no American specimens but Capt. King's, my own, and Cuming's (n. 1052). Its tropical representative is the beautiful little *G. marginella*.

8. GLEICHENIA, *Sm.*

1. Gleichenia *acutifolia*, Hook., *Sp. Fil.* vol. i. p. 7. t. 7. A.

Hab. Strait of Magalhaens; Port Famine, *Capt. King*.

Like all the pedate, erect, southern species of *Gleichenia*, this has a very narrow range, and is probably confined to the coast between the Strait of Magalhaens and Chiloe, whence the specimens quoted as Patagonian in Species

Filicum were brought by Capt. King. It is represented in New Zealand by the *G. Cunninghamii*, Hook.; in Tasmania by *G. tenera*, Brown, and *G. flabellata*, Br.; and in Chili, north of Valdivia, it appears to be in a great measure replaced by the *G. pedalis*, Kaulf.

2. Gleichenia *cryptocarpa*, Hook., *Sp. Fil.* vol. i. p. 7. t. 6 A.

Hab. Falkland Islands (West Island?); *Lieut. Robinson, Capt. Sulivan, Mr. Chartres.*

Very nearly allied to the *G. acutifolia*, but readily distinguishable by the revolute margins of the pinnæ covering the sori; this character, together with the stout, rigid, and very coriaceous habit, appear to indicate its being a native of drier places than the former. It has hitherto been found only in the Falklands, in plains of Valdivia, and on the Island of Chiloe.

9. SCHIZÆA, *Sm.*

1. Schizæa *australis*, Gaud., *in Ann. Sc. Nat.* vol. v. p. 98. *Fl. Antarct.* p. 111.

Hab. Falkland Islands; *Gaudichaud.*

I have seen no Falkland Island specimens except those collected by M. Gaudichaud, which are identical with others gathered by myself in Lord Auckland's group and Campbell's Island.

LII. LYCOPODIACEÆ, *Swartz.*

1. LYCOPODIUM, *Br.*

1. Lycopodium *Selago*, Linn., *Sp. Pl.* p. 1565. *Engl. Bot.* t. 233.

Var. *Saururus*. L. Saururus, *Lam. Encycl. Bot.* vol. iii. p. 625. *Bory, Voy. aux quatre Iles, &c.* vol. i. p. 344. t. 16. f. i. L. crassum, *H. B. K. Nov. Gen.* vol. i. p. 33. *Hook. et Grev. Ic. Fil.* t. ccxxiv. L. insulare, *Carm. in Trans. Linn. Soc.* vol. xii. p. 509. L. elongatum, *Swartz, Syn. Fil.* p. 175. L. carinatum, *Desv. Monogr.* n. 5. *Poiret, Encycl. Bot.* vol. iii. p. 555. Selago etc. *Dillenius, Hist. Muscc.* t. 84. f. 3.

Hab. Falkland Islands, *Gaudichaud, &c.* Var. *Saururus*, Kerguelen's Land, *J.D.H.*

The Falkland Island specimens are perfectly identical with others of British growth, but the var. *Saururus* is so different from any aspect of *L. Selago* found in Europe, that it requires the most perfect suite of specimens, showing the gradual passage of the one into the other, to prove their common origin. Such, however, exist, especially in volcanic islands, which seem peculiarly favourable to the production of this variety.

In its largest and handsomest form, the var. *Saururus* inhabits the Andes of Peru, the Island of Bourbon, and Kerguelen's Land. A more slender state, but not slenderer than what occurs amongst Andes specimens, is found in Tristan d'Acunha, St. Helena, and in some of the West Indian Islands.

The narrow form of var. *Saururus* was brought from St. Helena as early as 1702, and given to Dillenius, who figured it. On the Andes, and there alone, the *Selago* division of *Lycopodia* assume a deep brick-red colour, which, however, affords no specific character, for the *Saururus* is as often wholly green as red, and at other times is only tinged with the latter colour at the apices of the leaves; and this is the case with the Kerguelen's Land specimens. It is difficult to imagine the cause for this tint of plants. On the gloomy Island of Desolation, it cannot be due to the tropical sun, nor to colouring matter contained in the soil, for it also occurs in two species which I believe are always parasitical.

2. Lycopodium *clavatum*, Linn., *Sp. Pl.* p. 1564. *Engl. Bot.* t. 224.

Var. *Magellanicum*, foliis apice muticis. *Fl. Ant.* p. 133.

Var. *fastigiatum*, ramis erectis fastigiato-paniculatis.

Hab. Var. *Magellanicum*, Strait of Magalhaens and throughout Fuegia, the Falkland Islands, very abundant; Kerguelen's Land, *J. D. H.* Var. *fastigiatum*, Port Famine, *Capt. King*.

I have in the former part of this work given my reasons at length for assigning these varieties to *L. clavatum*. The var. *fastigiatum* is a plant of a warmer climate than the var. *Magellanicum*, which inhabits not only the low-lands of Fuegia, the Falklands, and Kerguelen's Land, but also the lofty heights of the Cordillera of Peru and Colombia, and the mountains of New Zealand, Tasmania, and Lord Auckland's group.

LIII. MARSILEACEÆ, *Br.*

1. AZOLLA, *Lam.*

1. Azolla *Magellanica*, Willd., *Sp. Pl.* vol. v. p. 541. A. filiculoides, *Lam. Encycl.* vol. i. p. 340.

Hab. Strait of Magalhaens, *Commerson*; Falkland Islands, *Gaudichaud*.

I am quite unacquainted with this species, either as a Falkland Island or Magellanic plant.

LIV. CHARACEÆ,

1. CHARA, *L.*

1. Chara *flexilis*, Linn., *Sp. Pl.* 1624. *Smith, Engl. Bot. t.* 1070.

Hab. Kerguelen's Land, in the fresh-water lake above Christmas Harbour, abundant, *J. D. H.*

After a careful comparison of this plant with English specimens of *C. flexilis*, I consider them to be the same species, and am confirmed in this opinion by my friend Mr. Wilson, who has studied the British species of this difficult genus very carefully; he says, that the points at the apices of the branches are, perhaps, longer than common in the Antarctic specimens. It is probably not an unfrequent plant in the southern temperate zone.

LV. MUSCI, *L.*

By W. Wilson, Esq., and J. D. Hooker.

1. ANDREÆA,* *Ehrh.*

1. Andreæa *alpina*, Linn.; caule ramoso elongato, foliis undique imbricatis patentibus apice incurvis obovatis acuminatis concavis infra medium contractis siccitate appressis. A. alpina, *Dill. Hist. Musc.* t. 73. f. 39. *Hook. et Tayl. Musc. Brit.* ed. 2. p. 2. t. 8.

Var. 1. foliis inferioribus squarrosis subrectis.

Var. 2. caulibus gracilioribus, foliis confertis.

Hab. Var. 1 and 2, Hermite Island, Cape Horn; Kerguelen's Land, var. 1, on alpine rocks.

This species has in Europe frequently been confounded with *A. rupestris*, and we cannot assent to the remark in the 'Muscologia Britannica, that Dr. Mohr was the first to distinguish it accurately; since neither the description of Weber and Mohr (*Bot. Tasch.* p. 383), nor their citation of Dillenius (*Hist. Musc.* t. 73. f. 40); as a synonym for *A. rupestris* instead of *A. Rothii*, tends to prove that these authors understood the species. The illustrative figures

* For the generic characters and remarks on this and other genera, see the 1st Part of this work.

and observations show that *A. alpina* of Weber and Mohr (*Bot. Tasch.* t. 11. f. 3, 5), is only a state of *A. rupestris*, with leaves spreading in all directions. This is confirmed by the fact that *A. alpina* of Mougeot and Nestler (*Stirp. Crypt. Vosges.* no. 115), is that very form of *A. rupestris* to which we allude. The figures of Dillenius doubtless refer to *A. alpina*; but the absence of a separate figure of *A. rupestris*, and the remark, "in rupibus surculi e fusco rufescunt" (p. 507), prove that this author considered both these as varieties of one species. The true *A. alpina* may always be known from *A. rupestris* by its obovate dark glossy leaves, and its longer and more robust stems.

2. Andreæa *marginata*, Hook. fil. et Wils.; caulibus laxe cæspitosis subramosis, foliis erecto-patentibus incurvis ovatis longe acuminatis infra medium contractis enerviis marginibus inferne pallidis caulinis majoribus superioribus confertis, perichætialibus longioribus elongatis late lanceolatis convolutis, theca exserta. (Tab. CLI. Fig. I.)

Hab. Hermite Island, Cape Horn, frequent on rocks on the mountains; *J. D. H.*

Caules unciales. *Folia* e basi ovata longe acuminata, concava, superiora in caule fertili sensim majora, laxiora et magis erecta, omnia puniceo-atra, nitentia, arcolis minutis, oblongis, marginalibus inferne minoribus, pallidioribus.

With some hesitation we venture to separate this from *A. alpina*, on account of the more gradual acumination of its leaves, which are full twice as long. It differs from *A. acutifolia* in having the leaves considerably larger, the lower part more suddenly dilated, and the base not gibbous; also in their dark colour and glossiness, and in the more evident perichætium. It is easily recognized by its habit.

Plate CLI. *Fig.* I.—1, a specimen:—*natural size*; *fig.* 2 and 3, leaves; *fig.* 4, theca:—*magnified.*

3. Andreæa *acutifolia*, Hook. fil. et Wils., *vid. Part* 1. p. 118.

Var. β. rufescens, ramis fastigiatis. (Tab. CLI. Fig. II. 2.)

Var. γ. foliis latioribus.

Var. δ. foliis superioribus subsecundis. (Tab. CLI. Fig. II. 1.)

Var. ε. foliis superioribus erectis elongatis.

Var. ζ. foliis erectis obtusiusculis atro-sanguineis.

Hab. Var. α, β, and ε, Hermite Island, Cape Horn. Var. δ and ζ, Falkland Islands. Var. γ, Kerguelen's Land.

All these varieties differ somewhat, though slightly, from that gathered in Campbell's Island.

Plate CLI. *Fig.* II.—1, specimen of var. δ, and 2, specimen of var. β:—*natural size*; *fig.* 3, perichætium and theca; *fig.* 4, perichætial leaves; *fig.* 5, cauline leaf of var. δ; *fig.* 6, leaf, and *fig.* 7, theca of var. β:—*magnified.*

4. Andreæa *rupestris*, Linn.; caule humili subramoso, foliis e basi vaginante patentibus (interdum secundis) ovato-lanceolatis vel ovatis superne attenuatis acutiusculis enervibus superioribus siccitate appressis, perichætialibus longioribus ovato-lanceolatis convolutis, theca exserta. A. rupestris, *Hook. et Tayl. Musc. Brit.* p. 2. t. viii.

Hab. Hermite Island, Cape Horn, frequent on maritime rocks.

Slightly differing from British specimens in its wider, less evidently papillose leaves, which are more suddenly dilated near the middle. Bridel (Bryol. Univ.) cites with doubt, Dillenius (Musc. p. 507. t. 73. f. 40) as a synonym for this species, but the description of Dillenius distinctly mentions the nerved leaves which are characteristic of *A. Rothii*, to which species even the description of Linnæus (as Bridel properly remarks) seems to refer. The second foliage, generally ascribed to *A. rupestris*, is not a constant character, even in specimens gathered in the same locality.

W. W. and J. D. Hdel^s W. Fosh lithog.

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5. Andreæa *mutabilis*, Hook. fil. et Wils., *vid. Part* 1. p. 119. pl. lvii. f. ii.

Var. γ, *subsecunda*; foliis laxioribus inferioribus secundis.

Var. δ. *uncinata*; foliis disaitis falcato-secundis.

Hab. Falkland Islands; both varieties, abundant.

The var. β. of this species is a Lord Auckland's group and Campbell Island plant.

6. Andreæa *laxifolia*, Hook. fil. et Wils.; caulibus laxe cæspitosis parce ramosis, foliis lanceolato-subulatis obtusiusculis concavis enerviis ramulinis falcato-secundis caulinis erectis subsecundis laxe imbricatis, perichætialibus elongatis ovato-lanceolatis convolutis, theca exserta ovato-oblonga. (Tab. CLI. fig. IV.)

Var. β. *minor*; theca subexserta.

Hab. Hermite Island, Cape Horn; not rare, on moist rocks in the higher parts of the Island. Var. β. on rocks near the sea.

Caulis vix uncialis. *Folia* ramulorum conferta, falcato-secunda, luteo-viridia; caulina dissita, majora, vix secunda, subamplexicaulia. *Florescentia* monoica: *flos masculus* primo terminalis, folia perigonialia rotundo-ovata, acutiuscula, concava. *Antheridia* 6. *Paraphyses* numerosæ, duplo longiores. *Theca* siccitate turbinata, basi pallida.

Plate CLI. *Fig.* IV.—1, a tuft of the natural size; 2, 3, 4, and 5, leaves; 6, theca:—*magnified*.

7. Andreæa *subulata*, Harvey; *vid.* Part 1. p. 119. pl. lvii. f. i.

Var. β. *rigida*; foliis minus falcatis crassioribus luridis.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; not uncommon.

The Auckland and Campbell Island variety differs slightly from the above.

Subgen. Acroschisma, *Hook. fil. et Wils.* (*Theca cylindracea, e basi ad medium et ultra indehiscens, apicem versus tantum in valvulis 4 vel 8 fissa*;—an genus proprium?)

8. Andreæa (Acroschisma) *Wilsoni*, Hook. fil.; caule laxe cæspitoso elongato ramoso, foliis ramulorum undique patentibus squarrosis spathulato-lanceolatis obtusiusculis caulinis erectis laxe imbricatis ovato-lanceolatis basi angustatis amplexicaulibus omnibus enervibus concavis marginibus inflexis, perichætialibus elongatis elliptico-oblongis convolutis, theca exserta cylindracea apicem versus fissa. (Tab. CLI. fig. III.)

Hab. Hermite Island, Cape Horn; on maritime rocks near the spray of rivulets, rare.

Caules sesquiuncíales, graciles, erecti, per intervallos breves innovantes, subdichotomi, steriles vage ramosi, rami patentes. *Folia* ramulorum lanceolata, basi subamplexicaulia, erecta, deinde patula, squarrosa, apice subincurva, obtusiuscula, lateribus inflexis, luteo-viridia, caulina majora, erecta, infra medium repente angustata, flavescentia, enervia, arcolis majusculis elongatis. *Florescentia* monoica: *antheridia* circiter 11, paraphysibus numerosis longissimis. *Theca* elongata, maxima, inferne integra, badia, apice in valvulis 4 vel 8 fissa.

Allied to *Andreæa laxifolia*, but differing in the remarkable capsule and also in the form of the leaves, which do not taper gradually from the base, but are widened near the middle.

Plate CLI. *Fig.* III.—1, a plant of the natural size; 2, branches; 3, young theca, &c.; 4, leaf; 5, mature theca; 6, perichætial leaf:—all *magnified*.

2. SPHAGNUM, *L.*

In addition to the former remarks on the structure of *Sphagnum*, we would observe, that the spirally lined cellules of the leaves do not constitute the proper parenchyma. The cellules, which contain the chlorophyll, are

those which are interposed between the larger utricles, and which form the network of the leaf. This is well explained by the cauline leaves of *Sphagnum fimbriatum* (Wils. MSS.), a very curious British and Antarctic species, long confounded with *S. acutifolium*; in them the spirally lined cells are altogether absent. Spirally lined cells communicate with each other by pores, as we have ourselves witnessed the passage of animalcules (vibrio) from one cell into another.

1. SPHAGNUM *cymbifolium*, Dill.; caule elongato, ramis crassis, foliis imbricatis patentibus ovatis obtusis concavis superne denticulatis cellulis ramulorum spiraliter lineatis. S. cymbifolium, *Nees et Hornsch. Bryol. Germ.* vol. i. p. 6. t. 1. f. 1. S. obtusifolium, *Hook. et Tayl. Musc. Brit.* ed. 2. p. 13. t. 4 (ex parte).

Var. 2. *condensatum*, Hook. fil. et Wils.; caule humili, ramulis brevissimis undique dense confertis. S. condensatum, *Brid. Bryol. Univ.* vol. i. p. 18 (?).

HAB. Falkland Islands; common in streams, bogs, and peat-ponds. Var. 2. Strait of Magalhaens, Port Famine, *Capt. King*.

In general aspect exceedingly like the more compact form of *S. compactum*, Bridel, but preserving the true character of the species to which we refer it, in the shape of the leaves, and in the markings of the ramuline cellules. Our specimens are all fertile, the stems not two inches in length. An example occurs where two capsules are produced upon the same pseudopodium.

Mr. Valentine was the first to point out (in the 'Muscologia Nottinghamensis') the structure of the cells of the ramuli, which, from oft-repeated observation, we consider a valid specific character, distinguishing this species from all others. On the other hand, the characters derived from the length of the peduncle and the disposition of the branches appear to be fallacious.

2. SPHAGNUM *fimbriatum*, Wils. MSS.; caule longiusculo gracili subramoso, foliis dimorphis, caulinis obovato-subrotundis obtusissimis fimbriatis, rameis ovato-lanceolatis acuminatis concavis acutis, perichætialibus obovatis obtusis valde concavis, theca brevi-pedunculata.

HAB. Hermite Island, Cape Horn, and the Falkland Islands.

Caulis plerumque gracilis. *Rami* 3-nati subinde 4–5-nati, longiusculi, apice attenuati. *Folia* caulina erecta, subrotunda, obtusissima, fimbriata!, cellulis propriis (chlorophyllo farctis) reticulum formantibus, interstitiis (e defectu utriculorum linea spirali notatorum) vacuis, folia ramorum conferta, erecto-patentia, apice subrecurva, concava, acuta, perichætialia subeucullata, subretusa, obtusissima, concava, thecam immaturam arcte amplectentia. *Theca* matura globosa, pedicello breviusculo exserto.

From *Sphagnum acutifolium*, Ehrh., this species may be readily known by its more slender habit, and is essentially distinguished by the peculiar cauline leaves, which consist of an open net-work of parenchymatous cells without any intermediate ones lined with spiral filaments; the perichætial leaves are also very different in shape, and those of the branches are more acute, their reticulation also is, especially at the summit, considerably smaller.

The specimens here described are not so slender as others gathered in Britain; but possess all their essential characters; the *S. acutifolia* of Montagne (Voy. au Pole Sud, Bot. Crypt. p. 232) is probably the same plant.

3. SPHAGNUM *cuspidatum*, Ehrh.; ramulis attenuatis laxis, foliis lanceolato-subulatis laxis patulis sicciate undulatis marginibus reflexis perichætialibus acutis. S. cuspidatum, *Nees et Hornsch. Bryol. Germ.* vol. i. p. 13. t. 4. f. 9. *Hook. et Tayl. Musc. Brit.* p. 15. t. iv.

HAB. Hermite Island, Cape Horn, and the Falkland Islands; common.

Neither this, nor any of the other southern *Sphagna*, are so universal in the Antarctic bogs as they are in the European and Arctic.

3. SCHISTIDIUM, *Bridel.*

Stoma nudum. *Calyptra* mitræformis s. campanulato-conica, in lacinias plures subæquales basi fissa, rarius integra. *Theca* æqualis, exapophysata.

1. SCHISTIDIUM *marginatum*, Hook. fil. et Wils.; caule erecto, foliis erecto-patentibus lanceolatis subapiculatis marginatis solidi-nerviis subdenticulatis, theca immersa subrotunda, operculo conico-rostrato erecto. (TAB. CLI. fig. VI.).

HAB. Kerguelen's Land; not uncommon on moist banks, alt. 500 feet, forming large patches on wet rocks, and on the debris of precipices.

Caules erecti, vix ramosi, 4 lin. longi, cæspitosi, pallide rubri, succulenti. *Folia* imbricata, erecto-patentia, siccitate paulo tortilia, lanceolato-oblonga, subundulata, inferiora spathulato-lingulata, nervo valido rufo subexcurrente instructa, rufo-viridia, areolis subquadratis, minutis; *perichætialia* paulo longiora, angustiora, erecta. *Seta* theca brevior, erecta, fusco-lutea. *Theca* ovato-cyathiformis, badia, basi rotundata, ore aperto. *Annulus* persistens, inconspicuus. *Operculum* conico-subulatum, capsula paulo longius. *Calyptra* campanulata, apice rufo-brunnea, basi pallida, membranacea, demum lacera. *Sporæ* minimæ, lutescentes. Species dioica?

Very distinct from all other described species.

PLATE CLI. *Fig.* VI.—1, a tuft of the natural size; 2 and 3, leaves; 4, theca; 5, calyptra:—*magnified.*

4. GYMNOSTOMUM, *Hedw.*

Stoma nudum. *Calyptra* cuculliformis vel ventricoso-subulata, latere fissa. *Theca* æqualis, exannulata.

1. GYMNOSTOMUM *Heimii*, Hedwig; foliis patentibus oblongo-lanceolatis subconcavis apice denticulatis nervo subcontinuo, theca truncato-obovata et oblonga, operculo oblique rostellato columellæ insidente. G. Heimii, *Hedwig, Stirp. Crypt.* vol. i. p. 84. t. 30. *Hook. et Tayl. Musc. Brit.* p. 22. t. vii. Pottia Heimii, *Bruch et Schimper, Bryol. Europæa.**

Var. 1, foliis angustis apice vix serrulatis.

Var. 2, foliis subovato-acuminatis margine pellucidioribus, theca turbinata brevi.

Var. 3, foliis latioribus obovatis concavis.

HAB. Falkland Islands, var. 1 and var. 3 (imperfect) perhaps a distinct species, found near the sea, in sandy places. Hermite Island, Cape Horn; var. 1, on maritime rocks; var. 2, on sandy banks.

Subgenus PHYSCOMITRIUM, *Bridel.*

2. GYMNOSTOMUM (Physcomitrium) *laxum*, Hook. fil et Wils.; cæspitosum, caule simpliciusculo, foliis erecto-patentibus laxe imbricatis elliptico-lanceolatis scutis concaviusculis integerrimis reticulatis siccitate vix crispatis, nervo sub apice evanido. (TAB. CLI. fig. V.)

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* For the sake of brevity, we omit in this work the generic distinctions proposed by Bruch and Schimper in the 'Bryologia Europæa', without, however, intending to question their validity in a natural system. *Pottia* comprises those terrestrial species of *Gymnostomum*, exclusive of *Physcomitrium*, which are of bi-triennial duration and have monoicous inflorescence.

Hab. Kerguelen's Land, not uncommon on moist sandy banks (barren).

Closely allied to the British *Physcomitrium pyriforme*, of which it may be a variety.

Plate CLI. *Fig.* V.—1, a tuft of the natural size; 2 and 3, leaves; 4, apex of ditto:—*magnified.*

5. LEPTOSTOMUM, *Br.*

1. Leptostomum *Menziesii*, Brown; caule subsimplici, foliis oblongo-ovatis apice denticulatis nervosis piliferis, theca oblongo-clavata subrecurva horizontaliter inclinata, operculo conico, rostro brevi obliquo. Gymnostomum Menziesii, *Hook. Musc. Exot.* t. 6.

Hab. Hermite Island, Cape Horn; very common from the sea coast to the top of the hills, alt. 1700 ft., on trees, rocks and banks, forming large noble tufts. Strait of Magalhaens, *D'Urville.*

6. SPLACHNUM, *L.*

1. Splachnum *Magellanicum*, Brid.; caule erecto subdiviso, foliis oblongo-lanceolatis acuminatis serratis evanidinerviis, pedunculis aggregatis, thecæ oblongæ ovatæ apophysi obconica, operculo convexo. S. Magellanicum, *Schwaegr. Suppl.* I. pt. 4. p. 47. t. 14. Eremodon Magellanicus, *Brid. Bryol. Univ.* vol. i. p. 236.

Hab. Hermite Island, Cape Horn, on the horizontal limbs and dead stumps of old trees in the woods, growing in large tufts.

Calyptra conico-mitræformis, basi appendiculata, demum lacera, pallida, apice flavescens.

Our specimens, though not in the best state for the examination of the capsules, all possess apparently a peristome of eight teeth; nevertheless we do not consider it necessary to remove this moss from *Splachnum*. Bridel's genus *Eremodon* is not adopted by Bruch and Schimper, and is indeed untenable. Our moss has characters which induce us to doubt whether it should be referred to *Tayloria* or to *Splachnum* of Bruch and Schimper. Its affinity with the European *Tayloria serrata* and *Rudolphiana* is too striking to be overlooked; but the pale apophysis, though not wider than the capsule, is evidently that of a true *Splachnum*; while the peristome connects it with *Dissodon*, Br. and Sch.

7. GRIMMIA, *Ehrh.*

Peristomium simplex. *Dentes* sedecim, pyramidati, pertusi, rarius imperforati, reflexiles. *Calyptra* mitræformis. *Theca* æqualis.

1. Grimmia *tortuosa*, Hook. fil. et Wils.; caule pulvinato, foliis erecto-patentibus lineari-lanceolatis acuminatis piliferis siccitate tortuosis, theca immersa subsessili urceolata, operculo convexo apiculato. (Tab. CLI. fig. VII.)

Hab. Falkland Islands; dry quartz rocks on Mount Vernet, alt. 1,000 feet, very scarce.

Caules 3–4-lineares, pulvinati, subramosi. *Folia* conferta, erecto-patentia, subflexuosa, lineari-lanceolata, acuminata, pilifera, carinata, margine paulo incrassata, subplana, nervo valido, dorso prominente, excurrente, siccitate tortilia, subcrispata, opaca, atroviridia, areolis minutissimis, punctatis, basi majoribus, reticulatis, pellucidis; *perichætialia* similia. *Seta* brevissima, vix ulla. *Theca* immersa, subrotunda, erecta, fusca, ore patulo. *Annulus* nullus. *Peristomii* dentes conniventes, siccitate erecti, subreflexi, pyramidati, integri, rubri. *Operculum* planiusculum, subrostellatum. *Sporæ* minimæ, ferrugineæ. *Calyptra* brevis, basi lacera, fusca, apice brunnea.

Apparently a distinct species, somewhat allied to *G. apocarpa*, as to the fruit; but in the foliage, more nearly to *G. trichophylla*.

PLATE CLI. *Fig.* VII.—1, a tuft of the natural size; 2, 3, and 4, leaves; 5, theca and calyptra; 6, teeth:—*magnified.*

2. GRIMMIA *falcata*, Hook. fil. et Wils.; caulibus laxe cæspitosis pendulis, foliis falcato-secundis lanceolato-subulatis crassinerviis canaliculatis integerrimis, theca immersa subsessili turbinata, operculo rostellato. (TAB. CLI. fig. VIII.)

HAB. Kerguelen's Land; on rocks and stones near a small waterfall.

Caules laxe cæspitosi, 1–3-unciales, penduli, flexuosi, ramosi, rami subincurvi. *Folia* imbricata, falcato-secunda, lanceolato-subulata, carnosa, integerrima, canaliculata, lateribus inflexis, nervo lato crasso excurrente, lurido-viridia, inferiora sæpe aqua destructa, nervo solo residuo, arcolis minutis subquadratis. *Perichætialia* ovato-lanceolata, acuminata, thecam superantia. *Vaginula* conica. *Theca* subsessilis, subrotunda, ore patulo, brunnea. *Annulus* nullus? *Peristomii* dentes magni, apice subperforati, incurvi, dorso trabeculati, rubri, siccitate recurvi. *Operculum* hemisphæricum, rostellatum, capsula brevius. *Calyptra* fusca, mitræformis, brevis. *Flos masculus* in axillis ramulorum ad basin ramuli fructiferi. *Antheridia* plurima, eparaphysata.

Allied to *Grimmia apocarpa*, var. *rivularis*, but very distinct in its falcate leaves, and broad thick nerve. As in that species, the columella generally falls away with the operculum. The short fertile branches are often clustered two or three together.

PLATE CLI. *Fig.* VIII.—1 and 2, plants of the natural size; 3, apex of branch; 4, leaf; 5, perichætial ditto; 6, theca; 7, operculum:—*magnified.*

3. GRIMMIA *maritima*, Turner, *Musc. Hib.* p. 23. t. 3. f. 2. *Hook. et Tayl. Musc. Brit.* p. 66. t. xiii. Schistidium maritimum, *Bruch et Schimper, Bryol. Europ.* fasc. 25–28. p. 10.

HAB. Hermite Island, Cape Horn; on granite rocks near the sea at St. Joachim's Bay.

Ab exemplis Britannicis his notis differt: *caulibus* longioribus pluries ramosis; *foliis* magis patulis, subrecurvis, perichætialibus apice diaphanis, nervo angustiore; *capsula* majore.

This moss affects the same localities in the Antarctic regions that it does in England.

4. GRIMMIA *apocarpa*, Linn.; *Hedw. Musc. Frond.* vol. i. p. 104. t. 39. *Hook. et Tayl. Musc. Brit.* p. 65. t. xiii. Schistidium apocarpum, *Bruch et Schimper, l. c.* p. 7.

Var. 1, foliis subpiliferis suberectis.

Var. 2, foliis obtusiusculis subpatentibus, perichætialibus obtusis.

Var. 3, foliis caulinis angustioribus, perichætialibus prægrandis obtusis.

Var. 4, foliis lineari-lanceolatis longioribus.

HAB. Falkland Islands; var. 1, slate rocks near the sea. Var. 2 and 3, Kerguelen's Land, on rocks, alt. 500 feet. Hermite Island, Cape Horn; on trap rocks near the sea.

The most striking feature of the three last named varieties is the large obtuse perichætial leaves. The habit and place of growth are similar to what this moss inhabits in Britain.

8. DRYPTODON, *Brid.*

This Bridelian genus appears to have been properly reduced to a section of *Racomitrium*, in the 'Bryologia Europæa' of Bruch and Schimper.

1. Dryptodon *rupestris*, Hook. fil. et Wils.; caule gracili fastigiato-ramoso, foliis patentibus ovato-lanceolatis carinatis margine recurvo nervo subcontinuo, seta brevi, theca elliptico-oblonga erecta, operculo rostrato. (Tab. CLII. fig. I.)

Hab. Hermite Island, Cape Horn; moist rocks on the northern slope of Mount Foster, alt. 600 feet.

Caules 1–2-uncinales, dense cæspitosi, gracilescentes, fastigiato-ramosi. *Folia* dense imbricata, patentia, ovato-lanceolata vel ovato-acuminata, inferiora subsquarrosa, superiora recurva, acutiuscula, carinata, margine subrecurva, nervo rubello, siccitate appresso-incurva, plus minusve spiraliter contorta, lurido-viridia. *Perichætialia* latiora, elliptico-oblonga, obtusa. *Seta* brevis, 1½ lin. longa, recta, siccitate tortilis. *Theca* erecta, elliptico-oblonga, subpyriformis, parvula, subcoriacea, rufo-brunnea, ore contracto. *Peristomii* dentes subsimplices, rubri, conniventes, siccitate patentes. *Operculum* rostro aciculari, theca paulo brevius. *Calyptra* non visa.

A more robust species than *D. crispulus* (nobis), with the leaves shorter, not piliferous, and the theca larger.

Plate CLII. *Fig.* I.—1, plant of the natural size; 2 and 3, leaves; 4 and 5, theca; 6, teeth of peristome:—*magnified*.

2. Dryptodon *crispulus*, Hook. fil. et Wils.; vid. Part 1. p. 124. pl. lvii. f. ix.

Var. β. foliis siccitate patulis rigidioribus.

Hab. Kerguelen's Land, in gravelly beds of rivulets.

Also a native of Campbell's Island, but not seen at Cape Horn or the Falkland Islands.

9. RACOMITRIUM, *Brid.*

1. Racomitrium *protensum*, Al. Braun; *Bruch et Schimper, Bryol. Europ.* fasc. 25–28. tab. Drypt. 2. R. aquaticum, *Brid. Bryol. Univ.* vol. i. p. 222. R. cataractarum, *Braun, Brid. l. c. Suppl.* p. 776.

Var. 1, subaquaticum, foliis acutis subsecundis.

Var. 2, caule humili, thecis minoribus.

Var. 3, caule robustiore, foliis longioribus secundis.

Hab. Hermite Island, Cape Horn; all the varieties. Falkland Islands; var. 2 (barren) and var. 3. Kerguelen's Land, also barren).

The last variety much resembles *R. aciculare*, Dill., but has acute leaves and the teeth of the peristome are longer and more slender. It is perhaps still more nearly allied to *Trichostomum subsecundum*, Hook. and Grev., (Hook. Ic. Pl. t. 17. f. 5), chiefly differing in its more robust habit and shorter seta.

2. Racomitrium *fasciculare*, Dill., *Bridel, Br. Univ.* vol. i. p. 218. *Bruch et Schimp. Bryol. Europ.* Trichostomum fasciculare, *Schwaegr. Suppl.* I. pt. 1. p. 155. t. 38.

Var. 2, caule gracili, ramulis brevissimis, foliis subsecundis luteo-viridibus, calyptra pallida.

Var. 3, caule gracili subsimplici, foliis acutiusculis siccitate subappressis, seta breviore, calyptra pallida.

Hab. Hermite Island, Cape Horn; all the varieties.

The last variety has some resemblance to *R. heterostichum*, var. γ. *gracilescens*, (Bruch and Schimper), but differs in having the leaves more acute and the teeth of the peristome larger and more regularly formed.

3. Racomitrium *heterostichum*, Brid.; *Bryol. Univ.* vol. i. p. 214. *Bruch et Schimper, Bryol. Europ.* fasc. 25–28. p. 9. t. 1. Trichostomum heterostichum, *Hedw. Musc. Frond.* vol. ii. t. 25.

W. W. & J. D. Nash. W. Finch lithog.

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Hab. Falkland Islands; on moist rocks on the hills, barren and stunted.

4. Racomitrium *lanuginosum*, Brid.; *Bryol. Univ.* vol. i. p. 215. *Flor. Antarct.* pt. 1. p. 124. *Bruch et Schimper, Bryol. Europ. l. c.* p. 11. t. 6. Trichostomum lanuginosum, *Hedw. Musc. Frond.* vol. iii. t. 2.

Hab. Falkland Islands; common on the hills, barren. Hermite Island, Cape Horn; also barren. Strait of Magalhaens; *D'Urville.*

This moss is very common throughout the Antarctic regions. The specimens from Hermite Island have the leaves more obscurely toothed than British examples, and the branches very short. It may be *R. Borbonicum*, Brid. (Br. Univ. vol. i. p. 218).

10. ORTHOTRICHUM, *Hedw.*

1. Orthotrichum *crassifolium*, Hook. fil. et Wils.; *see* Part 1. p. 125. pl. lvii. f. viii.

Var. γ, foliis superioribus ovato-lanceolatis acutiusculis.

Var. δ, foliis subsecundis.

Hab. Hermite Island, Cape Horn; vars. 1 and 3, very common on maritime rocks of granite and trap. Falkland Islands; var. 1, also on clay-slate. Kerguelen's Land; vars. 1 and 3 common.

Both these varieties differ from the Campbell's Island state of the moss.

2. Orthotrichum *luteolum*, Hook. fil. et Wils.; caule erecto ramoso, foliis erecto-patentibus siccitate crispulis anguste lineari-lanceolatis basi dilatatis margine planis, theca exserta ovali-oblonga siccitate sulcata, calyptra pilosa. Orthotrichum coarctatum, *Schwaegr. Suppl.* I. 2. p. 26. t. 52 (excl. syn. Belvisian.?). *Hook. et Grev.! in Brewst. Journ.* vol. i. p. 125 (nec Orth. coarctatum, *Br. et Schimp. Bryol. Europ.*) (Tab. CLII. fig. II.)

Var. β. calyptra glabra.

Hab. Hermite Island, Cape Horn; var. α. and β. on stems of shrubs, especially of *Berberis ilicifolia*, from the sea to alt. 1,000 feet, abundant, forming round soft tufts, rare on rocks. South part of Tierra del Fuego, *C. Darwin, Esq.*, n. 440.

Caules laxe pulvinati, luteoli, subunciales, ramosi. *Folia* conferta, erecto-patentia, curvula, anguste lineari-lanceolati, basi dilatata, ovata, utrinque laxe et pellucide reticulata, margine plana, nervo rubello, areolis laxe punctatis, luteola, siccitate parum crispula. *Vaginula* subpilosa, ovata, minuta. *Seta* longitudine varia folia perichætialia pleramque æquans vel superans, siccitate striata, in collum capsulare sensim dilatata. *Theca* subpyriformis, parva, pallide luteo-fusca, 8-strinta, sicca et vacua cylindracea, vix sulcata, ore haud constricto. *Peristomii* externi dentes 8, bigeminati, siccitate reflexi; interni cilia. *Calyptra* campanulata, pilosa, straminea, in var. β. glabra, brunnea. *Florescentia* monoica.

It will be seen how closely the description corresponds with that of *O. coarctatum*, Br. and Schimp.; but on comparing authentic specimens, we find the leaves in the latter much wider and carinate, less dilated at the base, more crisped when dry, the vaginula twice as long, capsule larger, and the habit considerably different. Our moss, unlike that, has very little resemblance to *O. crispum*, and is remarkable for its pale yellowish colour; it varies in the length of the seta. An original specimen of *O. coarctatum* (from P. de Beauvois in Professor Arnott's

Herbarium), as also the description (in Ætheog. p. 80), prove it to be identical with *O. Ludwigii*, Schwaegr., which therefore ought to have been named *O. coarctatum*.

PLATE CLII. *Fig.* II.—1, plant of the natural size; 2 and 3, leaves; 4, seta, theca, &c.; 5, calyptra; 6, theca; 7, teeth of peristome:—*magnified*.

3. ORTHOTRICHUM *crispum*, Hedw.; *Musc. Frond.* vol. ii. t. 35. *Hook. et Tayl. Musc. Brit.* p. 133. t. xxi. *Bruch et Schimper, Bryol. Europ.* fasc. 2–3. p. 23. t. 12.

HAB. Hermite Island, Cape Horn; on rocks and branches of trees near the sea, always barren.

This species often bears, at Hermite Island, jointed conferva-like gemmæ among the young leaves.

4. ORTHOTRICHUM *Magellanicum*, Mont., *in Voy. au Pole Sud, Bot. Crypt.* p. 290. t. 20. f. 2.

HAB. Strait of Magalhaens; *M. Jacquinot*.

11. MACROMITRIUM, *Brid.*

1. MACROMITRIUM *longipes*, Schwaegr.; *Suppl.* II. 2. p. 131.? Orthotrichum longipes, *Hook. Musc. Exot.* t. 24.

Var. ramis gracilioribus elongatis, foliis luridis erectis lineari-oblongis plicato-carinatis nervo excurrente.

HAB. Hermite Island, Cape Horn, *Mr. Davis*; barren.

Perhaps a distinct species; but though different in aspect, obvious characters are wanting to distinguish it from the Hookerian specimens.

12. WEISSIA, *Hedw.*

1. WEISSIA *crispula*, Ludw.; *vid.* Part 1. p. 127. t. lviii. f. ii. Dicranum interruptum, *Brid. Bryol. Univ.* vol. i. p. 488. Bryum pilosum interruptum, *Dill. Musc.* p. 376. t. 47. f. 38.

HAB. Hermite Island, Cape Horn; rocks on Kater's Peak, alt. 1,000–1700 feet, growing in tufts.

Apparently identical with the European plant, and also found in Campbell's Island.

2. WEISSIA *contecta*, Hook. fil. et Wils.; *vid.* Part. 1. p. 127. t. lxiii. f. iii.

HAB. Kerguelen's Land; barren, on rocks.

Also a native of Campbell's Island.

3. WEISSIA *acuta*, Hedw.; *Musc. Frond.* vol. iii. t. 35. *Hook. et Tayl. Musc. Brit.* p. 87. t. 14.

Var. β. theca subrotunda, seta breviore arcuata, peristomii dentibus latioribus cribroso-pertusis.

HAB. Falkland Islands; at Port Louis, barren. Hermite Island, Cape Horn; var. β. on wet rocks in and near water-courses, in St. Martin's Cove; wet sandy banks on Mount Foster.

We have no specimen of *Weissia acuta* β., Wahlenb. (Fl. Lapp.), which seems to differ, according to the description very little from our moss. The capsule of ours is turbinate when dry, with a very wide mouth. The seta is sometimes equally short in British specimens.

4. WEISSIA *stricta*, Hook. fil. et Wils.; caule ramoso, foliis subfalcatis lanceolato-setaceis rigidis canaliculatis integerrimis crassinerviis nervo longe excurrente, theca subrotunda, operculo rostrato. (TAB. CLII. fig. IV.)

HAB. Kerguelen's Land; on rocks near the sea, not uncommon.

Caules uncinles, laxe cæspitosi, ramosi. *Folia* suberecta, conferta, rigida, siccitate vix crispata, nervo lato crasso longe excurrente instructa, luteo-viridia; perichætialia longiora, basi latiora, erecta, convoluta. *Seta* 3-linearis, erecta vix tortilis, pallide rufa. *Theca* suberecta, subrotunda, ore contracta, rufo-brunnea, demum atro-rubens, vernicosa. *Peristomii* dentes 16, parvuli, conniventes, pyramidati, obtusiusculi, linea media notati. *Operculum* conico-rostratum, capsulæ longitudine, rostro curvato acuto. *Calyptra* dimidiata, subventricosa, fusco-lutea. *Florescentia* monoica.

We know of no described species with which this can be confounded. It is somewhat allied to the European *W. acuta*, but the capsules are larger, of a firm texture, retaining their shape when dry. In Dr. Lyall's specimens the leaves are more falcate and the seta shorter.

PLATE CLII. *Fig.* IV.—1, tufts of the natural size; 2, leaf; 3, young seta; 4, capsule; 5, the same before the fall of the calyptra:—all *magnified*.

5. WEISSIA *tortifolia*, Hook. fil. et Wils.; caule ramoso, foliis patentibus flexuosis siccitate crispatis lineari-subulatis canaliculatis integerrimis nervo excurrente, perichætialibus brevioribus convolutis, seta brevi, theca subrotunda, operculo rostrato. (TAB. CLII. fig. V.)

HAB. Kerguelen's Land, common on gravelly banks, from the sea to 1,000 feet.

Caules subuncinles, dense cæspitosi, ramosi. *Folia* patentia, varie flexuosa, siccitate crispata vel tortuosa, nervo gracili excurrente instructa, lutescenti-viridia, inferiora fuscescentia; perichætialia breviora, ovata, acuminata, convoluta. *Seta* vix 2-linearis, crassiuscula, fusco-brunnea. *Theca* erecta, subrotunda, rufo-brunnea, vernicosa, demum indurata. *Peristomii* dentes 16, pyramidati, conniventes. *Operculum* conico-rostratum, capsulæ longitudine, rostro obliquo. *Calyptra* cucullata, capsulam æquans illamque obtegens, brunnea. *Florescentia* monoica.

Very closely allied to *Weissia stricta* (nobis), but differing in the crisped widely spreading leaves, which are only half as long as in that species.

PLATE CLII. *Fig.* V.—1, tuft of the natural size; 2 and 3, leaves; 4 and 5, capsules:—all *magnified*.

13. DICRANUM, *Hedw.*

1. DICRANUM *aciphyllum*, Hook. fil. et Wils.; caule ramoso, foliis erecto-patentibus strictis rigidis lineari-lanceolatis integerrimis canaliculatis, nervo latissimo continuo, theca subcylindracea erecta, peristomii dentibus angustis subintegris, operculo longirostro. (TAB. CLII. fig. III.)

Var. 2. foliis secundis.

Var. 3. caule graciliore, foliis brevioribus siccitate subflexuosis, nervo tenuiore.

HAB. Staten-Land, *A. Menzies, Esq.*, (1787). Hermite Island, Cape Horn, on rocks and on branches of trees on the hills, alt. 700 feet. Falkland Islands, on rocky ground among the hills, rare in fruit. Patch Cove, Cape Tres Montes, *C. Darwin, Esq.* Vars. 2 and 3, Hermite Island; var. 3 forming small tufts from the sea-side to the tops of the hills, alt. 1,740 feet.

Caules binnciales, parce ramosi, cæspitosi, siccitate parum fragiles. *Folia* erecto-patentia, vix secunda, siccitate erecta, lateribus inflexis, canaliculata, integerrima, luteo-viridia, nervo latissimo ultra laminam in acumen longum rigidum subulatum producto; perichætialia ovato-lanceolata, vaginantia, caulinis breviora. *Seta* uncialis, tortilis, fusco-lutea, superne pallida. *Theca* subcylindracea, erecta, subæqualis, basi attenuata, fusca, demum siccitate substriata. *Peristomii dentes* 16, breves, angusti, trabeculati, perforati, vix apice fissi, siccitate erecti, rubri. *Sporæ* minutæ, virides. *Operculum* conico-rostratum, thecæ longitudine, rostro obliquo. *Calyptra* lutcola.

Nearly allied to *D. longisetum*, Hook. (Musc. Exot. t. 139), but differs in the more robust habit, leaves longer, wider, more rigid, less setaceous above, without serratures, the nerve broader and thicker, capsule longer, peristome smaller, the teeth not divided to the base as in that moss.

PLATE CLII. *Fig.* III.—1, tuft of the natural size; 2, leaf; 3, perichætial ditto; 4, theca; 5, calyptra; 6, theca and peristome; 7, teeth:—all *magnified*.

2 DICRANUM? *imponens*, Mont.; *in Voy. au Pole Sud, Bot. Crypt.* p. 298.

HAB. Strait of Magalhaens, *MM. Hombron et Jacquinot*. Hermite Island, Cape Horn; on the hills (barren).

Not having seen original specimens, it is necessary to mention that in the plant we refer to this species, the leaves are subsecund and entire; while in other respects they agree with the description quoted. *D. penicillatum*, Hornsch., to which Dr. Montagne compares his moss, belongs to the genus *Campylopus*, Brid.

3. DICRANUM *robustum*, Hook. fil. et Wils.; caule elongato subramoso, foliis falcato-secundis longissimis lineari-lanceolatis setaceo-attenuatis convolutis spinuloso-serrulatis, nervo latiusculo excurrente, perichætialibus intimis obtusis enerviis, theca cylindracea inclinata curvula strumulosa, operculo longirostro. D. scoparium, β. reflectens, *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 297? (TAB. CLII. fig. VIII.)

HAB. Hermite Island, Cape Horn; in woods, on the trunks and roots of trees, and in the open country, growing in large tufts, very abundant. Kerguelen's Land, *Dr. Lyall*.

Caules 4-unciales et ultra, robusti, parce ramosi, subinde incurvi, siccitate parum fragiles. *Folia* conferta, 6–7 lineas longa, apice setacea, inferne convoluta, superne carinata, margine dorsoque spinuloso-serrulata, viridia, inferiora squalida, perichætialia exteriora squarrosa, basi rotundato-ovata, acuminata, interiora erecta, convoluta, 3-linearia, elliptico-oblonga, obtusa cum mucrone lineari longiusculo, enervia. *Vaginula* linearis, elongata. *Seta* 7–8 lin. longa, crassiuscula, siccitate vix tortilis, rubella. *Theca* cylindracea, inclinata, curvula, rufo-brunnea, strumulosa. *Peristomii* dentes bifidi, rubri. *Operculum* theca paulo longius. *Calyptra* straminea, apice fusca.

A larger and more robust moss than *D. pungens*, nobis, which it much resembles, differing in its longer leaves, which are more decidedly serrated, less convolute, nerve broader and excurrent, the perichætial ones much shorter, and wholly different in shape, capsule longer and strumose, peristome larger. In general aspect it is not unlike the British *D. majus*, Turn., but is distinguished by the very long and attenuated leaves.

PLATE CLII. *Fig.* VIII.—1, moss, natural size; 2 and 3, leaves; 4 and 5, theces:—all *magnified*.

4. DICRANUM *pungens*, Hook. fil. et Wils.; *vid.* Pt. 1. p. 129. t. 59. f. 1.

Var. 2. foliis vix secundis.

Var. 3. foliis minoribus, vix secundis.

Var. 4. *lucidum*; foliis aureo-nitentibus falcato-secundis.

HAB. Hermite Island, Cape Horn. Vars. 1 and 4 (barren) on rocks, trunks of trees, and the ground, very abundant. Kerguelen's Land; Vars. 2 and 4, Cumberland Bay, *R. M'Cormick, Esq.*

The var. 4 is a very elegant moss, differing in aspect from the other varieties, but we are unable to detect sufficient characters to establish it as a species.

5. DICRANUM *Boryanum*, Schwaegr., *Suppl.* II. vol. i. p. 71. t. 121. Cecalyphum dichotomum, *P. Beauv. Prodr.* p. 41. Oncophorus dichotomus, *Brid. Br. Univ.* vol. i. p. 401.

HAB. Kerguelen's Land, common on the hills in large dense tufts, barren.

Our specimens agree precisely with an original one from P. de Beauvois himself. The leaves are more falcate and wider at the base than those of *D. Billardieri*, to which this moss is very closely allied.

6. DICRANUM *Billardieri*, Schwaegr., *Suppl.* II. vol. i. p. 170. t. 121. *Fl. Antarct.* p. 119.

Var. caulibus apice ramosis, ramis brevibus confertis flagelliformibus.

HAB. Falkland Islands, amongst stones on Mount Vernet, not common, and always barren.

This peculiar condition of the moss is probably the result of its exposure to a dry atmosphere. Similar appearances occur in such British species as *Campylopus flexuosus*.

7. DICRANUM *Starkii*, Web. et Mohr, *Bot. Tasch.* p. 189, 471. *Hook. et Tayl. Musc. Brit.* t. xvii. p. 97.

Var. 2. foliis vix secundis.

HAB. Hermite Island, Cape Horn, both varieties, the first in clefts of rocks, common, but rare in fruit.

These smaller and more erect than in European specimens. Intermediate between the usual form and *D. Sphagni*, Wahl.

8. DICRANUM *tenuifolium*, Hook. fil. et Wils.; caule ramoso, foliis circinatim falcatis basi lanceolatis longissime capillaceis integerrimis nervo lato percursis, theca turbinata, operculo longirostro. (TAB. CLII. fig. VII.)

HAB. Hermite Island; moist shelving rocks on Mount Foster, above Deep-water Bay, scarce.

Caules unciales, parce ramosi, cæspitosi, curvuli, luridi. *Folia* longissima, angustissima, conferta, eleganter circinato-falcata, lurido-viridia, inferiora atrata; perichætialia basi latiora, vaginantia. *Seta* 3–4 lineas metiens, crassiuscula, pallide lutescens. *Theca* parva, suberecta, turbinata, ore patulo, senior fusca. *Peristomii* dentes rubri. *Operculum* oblique longirostrum. *Calyptra* dimidiata, scariosa, fusco-lutea.

Our specimens are not in a very good state, being too far advanced. Allied to the European *D. falcatum*, from which it differs in having narrower and longer leaves, and a very small nearly erect capsule destitute of a struma.

PLATE CLII. *Fig.* VII.—1, moss, natural size; 2 and 3, leaves; 4–6, theca; 7, peristome:—all *magnified*.

9. DICRANUM *vaginatum*, Hook., *Musc. Exot.* t. 141.

HAB. Hermite Island, on moist banks of sea-sand in St. Joachim's Bay, rare.

Our moss differs from original specimens gathered by Humboldt on the Andes of New Grenada, in the following particulars: teeth of the peristome broader; capsule erect, short and turbinate; seta shorter and thicker; leaves entire, acute.

14. CAMPYLOPUS, *Bridel.*

1. CAMPYLOPUS *introflexus*, Bridel; *Br. Univ.* vol. i. p. 472. *Fl. Antarct.* pt. 1. p. 130. Dicranum introflexum, *Hedw. Sp. Musc.* p. 147. t. 29.

HAB. Falkland Islands, common on the ground, especially in peaty situations.

Also a native of Lord Auckland's group and Campbell's Island.

2. CAMPYLOPUS *flexuosus*, Bridel; *Br. Univ.* vol. i. p. 469. *Fl. Antarct.* l. c.

Var. foliis piliferis. Dicranum clavatum, *Schwaegr. Suppl.* t. 255?

HAB. Amsterdam Island, South Indian Ocean, *Lieut. Smith, R.N.*

Found also in Campbell's Island.

15. DIDYMODON, *Hedw.*

1. DIDYMODON *capillaceus*, Web. et Mohr, *Bot. Tasch.* p. 155. *Hook. et Tayl. Musc. Brit.* p. 119. t. 20. Swartzia capillacea, *Hedw. Musc. Frond.* vol. ii. p. 26.

HAB. Hermite Island, Cape Horn; on sandy banks near the sea, St. Joachim's Bay.

2. DIDYMODON *longifolius*. Trichostomum longifolium, *Brid. Br. Univ.* vol. i. p. 496. Trichostomum pallidum, *β.* strictum, *Schwaegr. Suppl.* II. vol. i. p. 77. t. 123?

Var. 2. *tenuifolius*; foliis basi magis dilatatis membranaceis, nervo duplo latiore.

Var. 3. *penicillatus*; caule fastigiato-ramoso, foliis longioribus erectis subquadrifariam imbricatis, nervo crassiore.

Var. 4. *curvifolius*; foliis subfalcatis secundis, e basi latiore sensim angustatis.

HAB. Staten Land, *A. Menzies, Esq.* (1787). Hermite Island, Cape Horn, vars. 1 and 4, abundant. South part of Fuegia, *C. Darwin, Esq.* Falkland Islands, var. 2, on the ground, rare in fruit; var. 3, on stones in streams, (barren).

From *Trichostomum pallidum* our moss differs essentially in the inflorescence, in the dilated base of the leaf, stronger nerve, cylindrical capsule, and also in the structure of the peristome. The var. 2 has at times an elliptical theca.

3. DIDYMODON? *glacialis*, Hook. fil. et Wils.; caule ramoso fastigiato-cæspitoso, foliis erecto-patentibus apice incurvis fragilibus ovato-lanceolatis lineari-acuminatis solidinerviis. (TAB. CLII. fig. VI.)

HAB. Cockburn Island, lat. 64° S. 57° W. (barren).

Caules 4 lin. longi, ramis erectis. *Folia* e basi concaviuscula, repente in acumen lineare producta, vel nervo crasso longe excurrente, margine haud reflexa, areolis minimis, subrotundis, inferioribus majoribus pellucidis, e fusco lurido-viridia.

One of the only three mosses which have hitherto been detected in a higher latitude than that of Cape Horn.

PLATE CLII. *Fig.* VI.—1, tuft of the natural size; 2, branch; 3, 4 and 5, leaves:—all *magnified*.

16. CERATODON, *Brid.*

1. CERATODON *purpureus*, Brid., *Br. Univ.* vol. i. p. 480. *Fl. Antarct.* pt. 1. p. 131. Didymodon, *Hook. et Tayl. Musc. Bot.* p. 113. t. 20.

HAB. Strait of Magalhaens, *M. Jacquinot* (in D'Urville's Voyage). Falkland Islands, common on clay soil and on the sand-hills about Port Louis. Not seen on Hermite Island.

A very abundant Antarctic plant in many situations.

17. TORTULA, *Hedw.*

We retain this name, instead of *Barbula*, for the following reasons: Schreber is the first authority for the union of the two Hedwigian genera *Tortula* and *Barbula* in the year 1791 (Gen. Plant.). He adopted the name *Tortula* which stands first in Hedwig's arrangement for both. This fact is overlooked by Bruch and Schimper, who in their history

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Reeve imp.

of this genus (Bryol. Europ.), rely chiefly on the authority of Bridel in support of *Barbula*. But Bridel's authority is in favour of *Tortula*, for he adopted it in his earlier work. It was discontinued by him in 1819 (*Mantissæ*) under the erroneous impression that the name had been legitimately given to a phenogamous genus; whereas *Barbula* had been applied nine years before by Loureiro to designate a Chinese shrub. Hence Schrader, Sibthorpe, Swartz, Roth, and all British writers on Mosses, retained *Tortula*, a name which would be at present unoccupied if not employed in conformity with the views of Hedwig and Schreber.

1. Tortula *densifolia*, Hook. fil. et Wils.; caule humili subdiviso, foliis patentibus confertis lanceolato-acuminatis acutis marginatis apice serratis solidinerviis, theca oblonga, peristomii dentibus contortis, membrana basilari breviuscula, operculo subulato. (Tab. CLIII. fig. I.)

Hab. Falkland Islands, on clayey rocks near the sea at Port Louis, scarce.

Dioica? *Caules* 4–6 lin. longi, laxe cæspitosi, subdivisi. *Folia* dense conferta, basi erecta, dein patentia, stricta, lanceolato-subulata, acuta, subcarinata, rigidiuscula, margine cartilaginea vix incrassata, apice dentato-serrata, nervo valido rubello, intescenti-viridia, areolis opacis minimis, basi majoribus subdiaphanis; perichætialia minora erecta. *Seta* 6–8 lin. longa, tortilis, fusca. *Theca* oblonga, erecta, fusca. *Peristomii* dentes basi membrana latiuscula conjuncti, rubelli. *Operculum* subulatum, capsula longitudine. *Calyptra* dimidiata, fusca.

The only described species with which this can be compared is *Barbula marginata*, Bruch and Schimp. (Bryol. Europ.); but that is a smaller moss, having leaves not at all acuminated, and an excurrent nerve.

Plate CLIII. *Fig.* I.—1, tuft of the natural size; 2, leaf; 3, apex of ditto; 4, theca:—*magnified*.

2. Tortula *robusta*, Hook. et Grev.; caule elongato subramoso, foliis patulo-recurvis lanceolatis subcarinatis acutis apice serratis solidinerviis, theca cylindracea curvula, peristomii dentibus contortis tubo ad tertiam partem producto, operculo subulato. T. robusta, *Hook. et Grev. in Brewst. Ed. Journ.* vol. i. p. 299. t. 12. (Tab. CLIII. fig. II.)

Var. *β*. foliis laxioribus viridibus.

Hab. Hermite Island, on sandy ground amongst grass at the head of St. Joachim's Bay, forming large patches. Var. *β*. Falkland Islands, common in moist sandy places (barren).

Dioica, cæspitosa. *Caules* sesquiunciales, robusti, ramosiusculi. *Folia* lanceolata, vix acuminata, patentia, recurva, subcarinata, acuta, apice serrata, margine recurva, flavescentia, nervo tenui saturatius colorato percursa, siccitate erecta, incurva, subtortilia, arcolis subrotundis, basi majoribus diaphanis, perichætialia similia erecta. *Seta* uncialis, sinistrorsum tortilis, rubella. *Theca* cylindracea, suberecta, curvula, rufo-fusca, ore rubello. *Annulus* persistens, albidus. *Peristomii tubus* basilaris dentium tertiam longitudinis partem æquans, albidus, dentes contorti, pulchre rubelli. *Operculum* subulatum capsula dimidio longius, flavescens. *Calyptra* dimidiata, castanea.

From all the European *Syntrichiæ* this species is distinguished by the serrated leaves. In size and general aspect it is not unlike *Barbula Mulleri*, Br. and Schimp.

After careful examination of the original specimens of *Tortula robusta* and *T. serrulata*, we have reason to believe that one, if not both, of these mosses is the same species as our Antarctic plants, differing only in the narrow leaves; but they are in too imperfect a state to determine very satisfactorily. The figure of *T. robusta* represents the leaves much too widely spreading, and they are also serrulate at the apex, just as in *T. serrulata*.

Plate CLIII. *Fig.* I.—1, plant of the natural size; 2, leaf; 3, theca; 4, apex of theca and peristome:—all *magnified*.

3. Tortula *Mulleri*. Barbula Mulleri, *Bruch et Schimp. Bryol. Europ.* fasc. 13–15. p. 44. t. 28.

Hab. Falkland Islands, on sand-hills near the Lagoon at Uranie Bay.

In our specimens the inflorescence is variable, even on the same stem; in some the antheridia and paraphyses are abundant, in others entirely wanting.

4. Tortula *lævipila*, (Barbula), *Bruch et Schimp. l. c.* p. 40. t. 25.

Var. 1. foliis erecto-patentibus dorso margineque papillosis, florescentia monoica (interdum hermaphrodita).

Var. 2. foliis ovalibus suberectis dorso lævibus.

Var. 3. caule gracili ramoso, foliis brevioribus suberectis elliptico-oblongis apice pilo brevi instructis margine subincurvis.

Var. 4. foliis obtusis areolis majusculis subrotundis.

Hab. Falkland Islands, vars. 1 and 2, on sandy soil near the sea; vars. 3 and 4, Cockburn Island, lat. 64° S., long. 57° W., both barren.

5. Tortula *gracilis*. Barbula gracilis, *Bruch et Schimp. l. c.* p. 22. t. 8. (Tab. CLIII. fig. III.)

Hab. Cockburn Island, (barren).

Our specimens differ from authentic examples in having the leaves more crowded, more pellucid at the base and less acuminated; the nerve also is wider.

Plate CLIII. *Fig.* III.—1, tuft of the natural size; 2 and 3, leaves; 4, areolæ:—*magnified*.

6. Tortula *hyperborea*, Mont. *in Voy. au Pole Sud, Bot. Crypt.* p. 302. t. 20. f. 4. Syntrichia hyperborea, *Brid. Bryol. Univ.* vol. i. p. 533. S. mucronifolia, *Br. in Parry's 1st Voy. App.* p. 198. *excl. synonym.*

Hab. Strait of Magalhaens; *M. Jacquinot*.

18. POLYTRICHUM, *Linn.*

1. Polytrichum *compressum*, Hook. fil. et Wils.; caule subsimplici, foliis suberectis subulatis concavis subserratis, theca inclinata ovata compressa microstoma, operculo conico-rostrato, calyptra apice subpilosa. (Tab. CLIII. fig. IV.)

Hab. Hermite Island, in various situations, chiefly on wet rocks, from the sea to the tops of the hills, rare in fruit.

Dioicum. *Caules* plus minus dense cæspitosi, vix ramosi, nunc luridi, nunc rufo-ferruginei, subinde luteo-virides. *Folia* erecto-patentia, imbricata, lanceolato-subulata; in caule masculo ovato-lanceolata, breviora; apice incurva, obtusiuscula, concava, mollia, subcarnosa; obscure serrata, nervo angusto haud lamellato instructa, areolis minutis subrotundis, opacis; pericluetialia longiora, erecta. *Seta* uncialis, crassa. *Theca* inclinata, subinde horizontalis, ovata, obliqua, compressa, microstoma, lurido-fusca. *Columella* compressa. *Peristomii* dentes circiter 32, irregulares, albidi. *Sporæ* minutæ, ferrugineæ. *Operculum* conico-rostratum, capsula duplo brevius. *Calyptra* apice subpilosa, latere fissa, parvula, fusca.

Allied to the Icelandic *P. levigatum*, Hook., but abundantly distinct in its compressed theca and narrower leaves.

Plate CLIII. *Fig.* IV.—1, plant of the natural size; 2 and 3, leaves; 4 and 5, thecæ; 6, calyptra:—all *magnified*.

2. Polytrichum *juniperinum*, Hedw., *Sp. Musc.* p. 89. t. 28. *Hook. et Tayl. Musc. Brit.* p. 45. t. 10.

Var. foliis confertis suberectis strictis.

Hab. Falkland Islands, on the moors, (barren). Hermite Island, Cape Horn, (barren).

Evidently the British species, and a very widely dispersed one.

3. Polytrichum *alpestre*, Hoppe; *Bridel, Br. Univ.* vol. ii. p. 140. P. juniperinum, var. *Hook. et Tayl. l. c.* p. 45.

Hab. Strait of Magalhaens, Port Famine, *Capt. King*.

This, which is also a British species, has been collected by Capt. King only.

4. Polytrichum *piliferum*, Schreb.; *Schwaegr. Suppl.* I. vol. ii. p. 313. t. 153. *Hook. et Tayl. l. c.* p. 44. t. 10.

Hab. Falkland Islands, not uncommon on the moors, rare in fruit.

Affecting the same locality and habit in the Falklands that it does in England.

5. Polytrichum *dendroides*, Schwaegr. *Suppl.* II. vol. ii. p. 2. t. 151.

Hab. Strait of Magalhaens, *D'Urville*. Hermite Island, in the woods, on steep banks by rivulets, not uncommon, but rare in fruit.

In fertile specimens the branches are arranged at intervals around a common axis, the lower ones usually subdivided. The peristome has some analogy to that of *Lyellia*, the teeth being very small and the connecting base remarkably thick and prominent. The calyptra is quite glabrous. Columella apparently winged. In habit this moss belongs to *Pogonatum* of Bruch and Schimper, but its other characters do not correspond.

6. Polytrichum *squamosum*, Hook. fil. et Wils.; caule elongato squamoso fastigiato-ramoso, ramis patentibus brevibus densis curvatis, foliis dense imbricatis erecto-patentibus lanceolato-subulatis strictis serratis. (Tab. CLIII. fig. VIII.)

Hab. Hermite Island, on the hills at an altitude of 1,000–1,500 feet, scarce and scattered, always barren.

Caulis subspithameus, ascendens, firmus, subflexuosus, atro-purpureus, maxima ex parte humo sepultus, triqueter, superne squamis appressis luteo-fuscis scariosis nitidis in folia caulina gradatim abeuntibus vestitus, apice dendroideo-ramosus; rami vix semiunciales, subsimplices, patentes, fastigiati. *Folia* dense conferta, suberecta, ad apices ramorum subsecunda, siccitate appressa, e basi membranacea pellucida semiamplexicauli lanceolato-subulata, vix trilineraria, superne lamellata, dorso carinaque scabra.

Although this moss is very different in aspect from *P. dendroides*, the characters seem scarcely sufficient to distinguish it. The short straight leaves are only half as long as in that species.

Plate CLIII. *Fig.* VIII.—1, plant of the natural size; 2 and 3, leaves:—*magnified*.

7. Polytrichum *Magellanicum*, Hedw., *Sp. Musc.* p. 101. t. 20. *Fl. Antarct.* pt. 1. p. 132. t. lix.

Hab. Strait of Magalhaens; *D'Urville, Hombron*. Hermite Island, on fallen trunks of old trees, &c., in the woods; also on alpine rocks, in clefts. Falkland Islands, not uncommon on the ground and in clefts of quartz rocks on the hills, (always barren).

19. CONOSTOMUM, *Sw.*

1. Conostomum *australe*, Swartz, *Schwaegr. Suppl.* II. vol. i. p. 108. t. 130. *Fl. Antarct.* pt. 1. p. 132.

Hab. Hermite Island, on open rocky ground on the hills, occupying the same situations as *C. boreale* in Europe. Falkland Islands, in similar localities, bearing fruit in November.

Entirely the representative of the British and Arctic *C. boreale*. Also found in Lord Auckland's group.

20. BARTRAMIA, *Hedw.*

1. Bartramia *patens*, Schwaegr., *Suppl.* I. vol. i. p. 55. t. 62. *Fl. Antarct.* pt. 1. p. 133.

Var. β. *intermedia*; caule minore.

Hab. Hermite Island, common in the woods, from the sea to the tops of the hills, in crevices of rocks, growing in dense soft tufts. Falkland Islands, common on wet clay-slate rocks near the sea, not found on the hills, abundant in fruit. Var. β. on clayey ground and rocks near the sea.

The variety β. differs only in its smaller size and in the general aspect, which resembles that of the British *B. ithyphylla*.

2. Bartramia *pendula*, Hook.; *Musc. Exot.* t. 21. *Fl. Antarct.* pt. 1. p. 133.

Var. 1. foliis e basi erecta patulo-squarrosis, margine evidentius recurvis parcius denticulatis.

Var. 2. caule longiore robustiore vix tomentoso, foliis latioribus subsecundis.

Hab. Hermite Island, in rocky places near the tops of the hills, scarce, abundant in fruit near the spray of a waterfall on the south side of St. Martin's Cove, forming large patches. Var. 2, always barren.

In some respects our moss resembles *B. tomentosa*, Hook. (Musc. Exot. t. 19), which we scarcely consider to be a distinct species, but the capsule is oblong and pendulous.

The var. 2 may be distinct. It resembles *Hypnum elongatum*, nobis. We have seen only the male inflorescence, which is truly that of *Bartramia*.

3. Bartramia *pomiformis*, Hedw.; *var.* crispa. B. crispa, *Swartz. Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 307.

Hab. Strait of Magalhaens; *Admiral D'Urville et M. Jacquinot.*

21. BRACHYMENIUM, *Hook.*

1. Brachymenium? *ovatum*, Hook. fil. et Wils.; caule humili, foliis laxe imbricatis erecto-patentibus quinquefariis ovato-oblongis nervo valido apiculatis. (Tab. CLIII. fig. IV.)

Hab. Falkland Islands, amongst dry quartz rocks on the hills, (barren).

Caules cæspitosi, inferne dense radiculosi, spongiosi, 1–2-uncinles, parce ramosi. *Folia* erecto-patentia, 5-faria, ovato-oblonga, planiuscula, integerrima, luteo-viridia, siccitate subincurva, nervo valido excurrente apiculata, areolis minimis, rotundis. In axillis foliorum fasciculi corporum fuscorum confervæ instar evadunt.

This moss resembles *Tetraphis pellucida*, but differs in the excurrent nerve and in the disposition and texture of the leaves.

Plate CLIII. *Fig.* IV.—1, tuft of the natural size; 2 and 3, leaves:—*magnified.*

22. ORTHODONTIUM, *Schwaegr.*

1. Orthodontium *australe*, Hook. fil. et Wils.; caule ramoso fastigiato humili, foliis erecto-patentibus subrecurvis anguste linearibus subflexuosis, nervo subcontinuo, theca suberecta oblonga brevicolla, operculo brevirostro. (Tab. CLIII. fig. V.)

Hab. Falkland Islands, alt. 900 feet, upon the fibrous roots of the Tussac grass; observed in one spot only. Hermite Island, in clefts of rocks on the hills and on wet banks, not uncommon.

Caules cæspitosi, 2–3 lin. longi, ramis brevibus apice coma incrassatis. *Folia* densa, e basi lineari longissime attenuata, subflexuosa, carinata, integerrima, viridia, nervo conspicuo sub apicem evanido, cellulis elongatis: pericheetialia longiora, similia, antheridiis in axillis eorum positis, paraphysibus paulo longioribus immixtis. *Seta* 4–5 lin. longa, gracilis, rubra, siccitate tortilis. *Vaginula* angusta, oblonga. *Theca* lanceolato-oblonga, inclinata, subinde erecta, ore angustato, demum rufescens, siccitate substriata. *Sporangium* internum paulo brevius. *Annulus* obscurus, operculo adhærens. *Operculum* basi conicum, rostello brevi obliquo, interdum conicum, acuminatum, rectum. *Peristomium* breve; dentes externi hyalini, transverse trabeculati, siccitate inflexi; interni processus 16 longiores, carinati, linea media notati, membrana basilari connexi, siccitate erecti, subincurvi. *Sporæ* minimæ, lutææ. *Calyptra* latere fissa, pallida, apice brunnea.

This differs from *Orthodontium lineare*, Schwaegr. (Suppl. t. 188), in the oblong suberect capsule, and in the absence of terminal male flowers, thus deviating from the generic character proposed by Schwaegrichen. In the inflorescence it agrees with the British *Orthodontium gracile*, Bruch and Schimper, but differs in the form of the capsule and the stronger nerve of the leaf.

PLATE CLIII. *Fig.* V.—1, plant of the natural size; 2, leaf; 3 and 4, thecæ; 5, peristome:—all *magnified*.

23. BRYUM, *Dill.*

1. BRYUM *nutans*, Schreb.; *Hook. et Tayl. Musc. Brit.* p. 208. t. 29. *Fl. Antarct.* pt. 1. p. 134.

HAB. Falkland Islands; from the sea to the hill-tops, varying in size and habit. Hermite Island, Cape Horn; in clefts of rocks in the woods, and on hard soil by streams.

A common Antarctic moss; also a native of Lord Auckland's group.

2. BRYUM *lacuatre*, Brid.; *Bruch et Schimp. Bryol. Europ. Monogr.* p. 16. t. 2.

HAB. Hermite Island; on sandy banks close to the brushwood a little above high water mark, St. Joachim's Bay.

3. BRYUM *bimum*, Schreb.; *Bruch et Schimp. l. c.* p. 50. t. 21.

HAB. Kerguelen's Land (barren).

4. BRYUM *Billardieri*, Schwaegr.; *Suppl.* I. vol. ii. p. 115. t. 76 (*non Bruch et Schimp. l. c.* p. 58. t. 26.)

HAB. Falkland Islands; on clay-slate rocks at Port Louis, rare and barren.

The European specimens, described by Bruch and Schimper, belong to *B. Canariense*, Schwaegr. (Suppl. t. 214 *b*); we do not however contend for that moss being a really distinct species.

5. BRYUM *argenteum*, Linn.; *Hook. et Tayl. Musc. Brit.* p. 199. t. 29. *Bruch et Schimp. l. c.* p. 78. t. 41.

Var. foliis arcte imbricatis angustioribus acuminatis.

HAB. Falkland Islands; in sandy places near the sea, common. Cockburn Island, (barren).

This variety is connected with the ordinary states of the species by intermediate forms which Mathews gathered at Cassipi (Peru). The Hookerian Herbarium contains a *Bryum*, collected by Humboldt in South America, with muticous convolute leaves, allied to this, but probably a distinct species.

6. BRYUM *cæspititium*, Linn.; *Hook. et Tayl. Musc. Brit.* p. 201. t. 29. *Bruch et Schimp. l. c.* p. 70. t. 34.

Var. β. gracilescens, *Bruch et Schimp.*

HAB. Strait of Magalhaens, *M. Jacquinot*. Falkland Islands, with unripe fruit. Var. β. Falkland Islands (barren).

7. Bryum *pallescens*, Schwaegr.; *Suppl.* I. vol. ii. p. 67. t. 74. *Bruch et Schimp. l. c.* p. 51. t. 22.

Hab. Falkland Islands, on sand-hills at Uranie Bay. Hermite Island, Cape Horn.

8. Bryum *Antarcticum*, Hook. fil. et Wils.; monoicum, caulibus ramosis crespitosis, foliis confertis imbricatis erecto-patentibus ovatis acuminatis concavis reticulatis evanidinerviis margine planis. (Tab. CLIII. fig. VI.)

Hab. Cockburn Island, lat. 64° S., long. 57° W., with young setæ.

Caulis 2 lin. longi, rubelli, inferne radiculosi. *Folia* late ovata, acumine brevi, apice diaphana, subdenticulata, rufescentia, nervo latiusculo rubello sub apice evanido, areolis subquadratis; perichætialia majora, acumine longiore. *Seta* vix 1½ lin. longa, crassiuscula, rubra. *Calyptra* rubra. *Flos masculus* in ramulis brevibus per innovationes lateralis floribus *fœmineis* alternans; antheridia cum paraphysibus longioribus subclavatis; archegonia paraphysibus brevioribus filiformibus immixta.

Nearly allied to the British *B. Zierii*, Dicks., but differing essentially in the inflorescence. The leaves are more crowded and have smaller areolæ.

Plate CLIII. *Fig.* VI.—1, tuft of the natural size; 2, stem and 3, leaf, both *magnified*.

9. Bryum *Wahlenbergii*, Schwaegr.; *Bruch et Schimper*, l. c. p. 44. t. 17., *Fl. Ant.* pt. 1. p. 134.

Var. 1. caule rubro, foliis ovatis rubellis.

Var. 2. foliis ovato-lanceolatis laxis viridibus.

Var. 3. caule elongato 2–3-unciali ramoso, foliis rubescentibus ovato-lanceolatis secundis.

Var. 4. foliis ovatis secundis minoribus nigro-viridibus.

Hab. Hermite Island, Cape Horn; var. 1, sand near the sea. Falkland Islands; var. 3, slate rocks near the sea (barren); Kerguelen's Land; var. 1, 2, and 4, all abundant.

The var. 1 is very similar to British specimens, differing in the colour of the leaves and in their being less acute. This moss also inhabits Lord Auckland's group.

10. Bryum *vagans*, Hook. fil. et Wils.; caule vage ramoso, foliis patentibus secundis ovato-lanceolatis apiculatis submarginatis apice serratis, nervo subcontinuo. (Tab. CLIV. fig. 1.)

Hab. Hermite Island; marshy places in the woods, especially on slopes, frequent, (barren.)

Caulis basi procumbens, fere repens, biuncialis, apice ascendens, sæpe incurvus, vage ramosus, rami erecti, apice curvati. *Folia* laxe imbricata, patentia, secunda, mollia, ovato-lanceolata, apiculata, concaviuscula, submarginata; nempe areolis marginalibus angustioribus, confertis, cæteris majusculis, subrhomboideis, apice serrulata, basi haud decurrentia, nervo tenui subcontinuo instructa, juniora pallide viridia, vetustiora luteo-viridia. *Flos masculus* discoideus, terminalis; folia perigonialia late ovata, basi erecta, concava, superne patula, serrulata; antheridia numerosa, cylindracea, paraphysibus filiformibus immixta.

Allied to *B. Wahlenbergii*, but larger, the leaves twice as long, less succulent, not decurrent at the base, margined, apiculate, the nerve extending higher. During the winter months, owing to shifting of the watercourses, the banks on which this moss grows become inundated, and the varieties that ensue are very puzzling. The original plant is gradually covered by a carpet of young branches of a bright green colour, the whole forming a soft spongy and treacherous covering to the bogs.

Plate CLIV. *Fig.* I.—1, plant of the natural size; 2, leaf; 3, areolæ of ditto,—*magnified*.

I.

Bryum vagans

II.

Hypn. politum

III.

B. lævigatum.

IV.

H. subpilosum

V.

H. reticulatum

VI.

Leskia nuda

W.W. and J.D.H. del. W.Fitch lithog.

Reeve imp.

11. Bryum *lævigatum*, Hook. fil. et Wils; caule ramoso, foliis erecto-patentibus imbricatis ovatis concavis integerrimis siccitate erectis, nervo subcontinuo, theca pendula ovato-oblonga, operculo conico obtuso. (Tab. CLIV. fig. III.).

Var. β. foliis angustioribus minus concavis.

Hab. Hermite Island; wet rocks on Mount Foster, (barren); Falkland Islands; common in bogs, (always barren.) Var. β. Kerguelen's Land (barren).

Dioicum? *Caules* unciales–triunciales, steriles longiores, inferne radiculis tomentosis nigricantibus intertexti, ramosi. *Folia* imbricata, subpatentia, ovata vel elliptico-oblonga, subcallosa, concava, integerrima, nervo valido vix sub apice evanido instructa, læte viridia, nitentia, inferiora e fusco-purpurascentia, siccitate subappressa. *Seta* 1–8 lin. longa, rufa, nitida, haud tortilis. *Theca* pendula, subpyriformis, oblonga, ore subpatulo, rufo, nitido. *Peristomii* externi dentes ferruginei, siccitate erecti; interni cilia perforata ciliolis singulis interjectis. *Operculum* breve, conicum, obtusum.

Our description and figure are drawn up in part from specimens gathered in Van Diemen's Land, by Mr. Lawrence. A very distinct species, characterised by its concave shining subcoriaceous leaves, retaining their shape when dry, intermixed with dark purple radicles.

Plate CLIV. *Fig.* III.—1 and 3, stems of two states, from Hermite Island; 2, a third state, from Van Diemen's Land, of the natural size: 4 and 5, leaves; 6, theca;—*magnified.*

12. Bryum *truncorum*, Bridel, *Bryol. Univ.* vol. 1. p. 699.

Hab. Falkland Islands; with fruit rare, Dr. Lyall; and a taller barren state in marshy places, not uncommon.

24. MNIUM, *Bruch et Schimper.*

1. Mnium *rostratum*, Bruch et Schimper; *Bryol. Europ. Monogr.* p. 27. t. 7. Bryum rostratum, *Hook. et Tayl. Musc. Brit.* p. 208. t. xxx.

Hab. Strait of Magalhaens, Port Famine; *Capt. King*, (barren).

25. FUNARIA, *Schreb.*

1. Funaria *hygrometrica*, Hedw.; *Fl. Antarct.* pt. 1. p. 135., *Hook. et Tayl. Musc. Brit.* p. 171. t. xx.

Hab. Falkland Islands; common at Port Louis, on burnt ground.

Not hitherto found in Fuegia, but a native of Campbell's Island.

26. ANŒCTANGIUM, *Brid.*

1. Anœctangium *Humboldti*, Brid. Hedwigia Humboldti, *Hook. Musc. Exot.* t. 137; *Fl. Antarct.* pt. 1. p. 135.

Var. β. australe.

Hab. Hermite Island; on a moist sloping rock exposed to the north, on Mount Foster, alt. 1000 ft.; in large barren patches resembling a discoloured mass of *Sphagnum*.

These specimens are intermediate between the typical form and that of Lord Auckland's and Campbell Island.

27. LEUCODON, *Schwaegr.*

1. LEUCODON *Lagurus*, Hook; *Musc. Exot.* t. 126. *Fl. Antarct.* pt. 1. p. 136.

HAB. Strait of Magalhaens; Port Famine; *D'Urville et Jacquinot.* Hermite Island; on trees in the forest and on rocks from the sea to an altitude of 1200 feet in large tufts.

Larger than the specimen figured in the 'Musci Exotici'; the capsules inclined, substrumose, the teeth of the peristome united regularly in pairs by transverse bars, pale yellow, leaves nerved half-way.

28. LESKIA, *Hedwig.*

1. LESKIA *nitida*, Hook. fil. et Wils.; caule vage ramoso, ramis longiusculis subsimplicibus teretibus, foliis imbricatis suberectis ovato-oblongis acuminatis concavis integerrimis basi binerviis, seta lævi, theca cylindracea suberecta curvula, operculo brevirostri. (TAB. CLIV. fig. VI).

HAB. Staten Land; *A. Menzies, Esq.* (1787). Hermite Island; Cape Horn; barren.

Caules sesquiunciales, steriles longiores, molles, virides; *rami* teretes, filiformes, apice o foliis convolutis cuspidati. *Folia* dense imbricata, erecto-patentia, ovato-oblonga, acuminata, acumine vix tertiam partem folii æquante, concava, subconvoluta, integerrima, nervis basilaribus duobus instructa, lutescenti-viridia, sericeo-nitentia, tenuissime elongato-areolata; perichætialia longiora, subsquarrosa. *Seta* uncialis, tortilis, gracilis, rubra. *Theca* cylindracea, suberecta, curvula, interdum subcernua, basi attenuata, brunnea. *Operculum* basi conicum, rostello obliquo, capsula dimidio brevius, badium. *Annulus* operculo adherens. *Peristomii* externi dentes lutei, linea media notati, acuminati; interni processus breviores, angusti, carinati, *ciliolis nullis*.

This moss has considerable resemblance to *Hypnum stramineum*, but differs in having the leaves almost piliferous, in the rostrate operculum and in the structure of the peristome. It is also allied to *Hypnum crinitum*, nobis, from Van Diemen's Land.

PLATE CLIV. *Fig.* VI.—1, fruiting, and 2, barren specimen, of the natural size: 3 and 4, leaves; 5, theca:—*magnified.*

29. HYPNUM, *Dill.*

a. *Foliis distichis.*

1. HYPNUM *politum*, Hook. fil et Wils.; caule ramoso compresso, foliis distichis patentibus oblongis compresso-carinatis subpiliferis integerrimis enerviis, seta lævi, theca suberecta oblonga. (TAB. CLIV. fig. II.)

HAB. Hermite Island; common in woods near the sea. Kerguelen's Land; in rocky places (barren).

Caules uncinales et ultra, cæspitosi, subramosi, complanati, distiche ramosi; rami compressi. *Folia* arcte imbricata, patentia, distícha, elliptico-oblonga, scaphæformia vel compresso-carinata, apice cucullata, subpilifera, integerrima, enervia, læte viridia, sericeo-nitentia, tenuissime areolata; perichætialia ovata, longe acuminata, erecta, integerrima, caulinis duplo breviora. *Seta* vix uncialis, lævis, rufo-fusca. *Theca* oblonga, suberecta, sub-apophysata, ore patulo. *Peristomii* externi dentes lutei, incurvi, linea media notati; interni cilia ciliolis interpositis. *Calyptra* dimidiata, straminea. *Operculum* non visum.

A beautiful species, unlike any hitherto described.

PLATE CLIV. *Fig.* II.—Specimen of the natural size: 2 and 3, leaves; 4, thecæ; 5, peristome; all *magnified.*

2. HYPNUM *denticulatum*, Dill. Linn.; *Hedw. Musc. Frond.* vol. 4. t. 31. *Hook. et Tayl. Musc. Brit.* p. 153. t. xxiv.

HAB. Hermite Island; on moist banks, wet rocks, &c., not uncommon, (barren).

3. HYPNUM *reticulatum*, Hook. fil. et Wils.; caule erecto simpliciusculo, foliis distichis patentibus ovato-lanceolatis acuminatis vix piliferis submarginatis reticulatis apice serrulatis, nervo tenui subexcurrente. (TAB. CLIV. Fig. V.)

HAB. Hermite Island; on the ground in damp woods, rare (barren).

Caules laxe cæspitosi, unciales, subelongati, erecti, plerumque simplices, complanati, molles. *Folia* disticha, patentia, subobliqua, acutissima, fere pilifera, areolis marginalibus angustioribus confertis, cæteris majusculis subrhomboideis, recentiora lete viridia, nitentia.

The many points of correspondence between this moss and *Brywm vagans*, nobis, have not escaped our notice. The specimens being few and barren, we are unable to pronounce with confidence on the validity of the species. It differs from *H. subbasilare* in the acuminated distichous leaves and almost excurrent nerve. In habit it much resembles *H. denticulatum*.

PLATE CLIV. *Fig.* V.—1, plant of the natural size; 2, leaf; 3, apex of ditto:—*magnified*.

4. HYPNUM *riparium*, Dill. Linn.; *Hedw. Musc. Frond.* vol. 4. t. 3. *Hook. et Tayl. Musc. Brit.* p. 152. t. xxiv.

Var. 2. caule elongato rigido, foliis dissitis minoribus rigidulis.

HAB. Kerguelen's Land; both varieties, in the lake near Christmas Harbour (barren).

With the habit of *Fontinalis*; probably a distinct species, but the specimens are not in a state to be determined satisfactorily.

b. *Foliis imbricatis, seta radicali.*

5. HYPNUM *mnioides*, Hook.; *Musc. Exot.* t. 77. *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 329. H. subbasilare (ex errore), *Schwaegr. Suppl.* t. 256.

HAB. Strait of Magalhaens, *D'Urville*. Hermite Island; abundant everywhere in the woods.

Closely allied to *H. spiniforme*, from which it chiefly differs in its broader leaves.

6. HYPNUM *subbasilare*, Hook.; *Musc. Exot.* t. 10. H. mnioides (ex errore), *Schwaegr. Suppl.* t. 257.

HAB. Hermite Island; in moist woods, at the roots of trees, very common, growing in tufts.

This species so much resembles *H. mnioides*, as to be scarcely distinguishable from it until gathered.

In our specimens the leaves are by no means bifarious, as stated in the *Musci Exotici*, and are compressed only when dry. The perichætial leaves are erect, almost piliferous, and nerved to the apex; young calyptra coriaceous, slightly ventricose, not subulate, at length dimidiate. The operculum is absent from all our specimens.

c. *Foliis imbricatis ruptinerviis, seta laterali.*

7. HYPNUM *rutabulum*, Dill. Linn.; *Hedw. Musc. Frond.* vol. 4. t. 12. *Hook. et Tayl. Musc. Brit.* p. 176. t. xxvi. *Fl. Antarct.* pt. 1. p. 138.

Var. 1. foliis apice attenuatis, perichætialibus erectis.

Var. 2. foliis majoribus lete viridibus.

Var. 3. caulibus 2–3-pollicaribus, foliis angustioribus luteo-viridibus nitentibus inferioribus fuscis.

Var. 4. caule elongato graciliore.

Var. 5. caule elongato, foliis subcirrhosis brevinerviis.

Hab. Hermite Island, Cape Horn; var. 1. wet rocks in the woods; var. 2, roots of trees (barren). Falkland Islands; var. 5. springy places, forming large green masses. Kerguelen's Land; var. 3. wet places on the hills (barren); var. 4. wet bogs (barren).

The second of these varieties resembles very closely the European plant.

8. Hypnum *subpilosum*, Hopk. fil. et Wils.; caule fastigiato-ramoso, foliis cordato-ovatis imbricatis suberectis acuminatis subpiliferis concavis striatis serrulatis ruptinerviis. (Tab. CLIV. Fig. IV.)

Hab. Hermite Island, Cape Horn; in moist earth, near the tops of the hills, altitude 1500 feet.

Monoicum. *Caules* laxe cæspitosi, sesquiunciales, vage ramosi, subfastigiati; rami patentes, subrecurvi. *Folia* arcte imbricata, suberecta, cordato-ovata, repente acuminata, acumine fere piliformi, reflexiuscula, concava, subplicata, serrulata, nervo crasso medio exarata, læte viridia, inferiora squalida, areolis angustis. *Seta* inferne lævis, superne scabriuscula. (Cætera desunt).

Closely allied to *H. rutabulum*, but smaller and more rigid, the leaves more closely imbricated and almost piliferous.

Plate CLIV. *Fig.* IV.—1, plant of the natural size; 2, leaf:—*magnified*.

9. Hypnum *albicans*, Dill. Neck.; *Hedw. Musc. Frond.* vol. 4. t. 5. *Hook. et Tayl. Musc. Brit.* p. 167. t. xxv.

Var. caule elongato, foliis luteo-viridibus.

Hab. Hermite Island; in moist places and streams, not uncommon (barren).

This resembles Var. 4. of *H. rutabulum*, but has more distinctly striated leaves.

10. Hypnum *serpens*, Dill. Linn.; *Hedw. Musc. Frond.* vol. iv. t. 18. *Hook et Tayl. Musc. Brit.* p. 153. t. xxiv.

Var. 1. foliis subsecundis subsolidinerviis.

Var. 2. foliis ovatis brevioribus latioribus.

Hab. Kerguelen's Land; both varieties on the rhizomata of the "Cabbage", *Pringlea*, (barren).

d. *Foliis imbricatis subenerviis, seta laterali.*

11. Hypnum *chlamydophyllum*, Hook. fil. et Wils.; *Fl. Antarct.* pt. 1. p. 139. t. lix. fig. i.

Hab. Hermite Island; moist rocks on the hill-tops, altitude 1400 ft., rare.

Also a native of Tasmania and Campbell's Island.

12. Hypnum *auriculatum*; Montagne *in Voy. au Pole Sud, Bot. Crypt.* p. 331. t. 20. f. 3.

Hab. Strait of Magelhaens, *M. Jacquinot.*

13. Hypnum *lucidulum*, Hook. fil. et Wils.; caule ramoso humili, foliis erecto-patentibus ovato-acuminatis apice attenuatis integerrimis margine reflexis basi 1–2-nerviis, seta lævi, theca cernua ovato-oblonga. (Tab. CLV. Fig. I.)

I.

Hypn. lucidulum.

II.

H. paradoxum.

III.

Hypn. conspissatum.

IV.

H. lithophilum.

V.

Hook. flaccida.

VI.

Hook. apiculata.

J. D. M. del. W. Fitch lith.

Reeve imp.

Hab. Hermite Island; on banks and moist rocks in the evergreen beech-woods, abundant; also in crevices of rocks on the hills.

Caules semiuncriales et ultra, cæspitosi, ramosi, molles, fragiles. *Folia* conferta, imbricata, erecto-patentia vix secundo, ovato-acuminata, concaviuscula, apice attenuata, subpilifera, tenera, margine reflexa, basi 1–2-nervia, pallide viridia, nitida, tenuissime areolata; perichætialia ovata, breviter acuminata, erecta, integerrima. *Seta* 7–8 lin. longa, lævis, apice incurvata, rubra. *Theca* ovato-oblonga, basi attenuata, curvula, e setæ apice curvata cernua, brunnea. *Peristomium* externum luteum, internum albescens, ciliolis binis.

This moss bears some resemblance to *H. Silesianum*, Schwaegr., but is quite distinct in character, and allied also to *H. adnatum*, Hedw., from which it differs in the flaccid leaves, recurved at the margin.

Plate CLV. *Fig.* I.—1, plant of the natural size; 2 and 3, leaves; 4 and 5, thecæ:—*magnified.*

e. *Foliis patulis squarrosis.*

14. Hypnum *aciculare*, Brid.; *Schwaegr. Suppl.* I. vol. ii. p. 230. t. 92. *Fl. Antarct.* pt. 1. p. 140.

Hab. Staten Land, *A. Menzies, Esq.* Hermite Island; in woods near the sea, not uncommon.

A very abundant plant in the South temperate and colder regions.

f. *Foliis secundis nervosis.*

15. Hypnum *conspissatum*, Hook. fil. et Wils.; caule elongato ramoso, foliis patentibus secundis ovato-lanceolatis acuminatis integerrimis margine incrassatis solidinerviis. (Tab. CLV. Fig. III.)

Var. 2. caule longiore, foliis latioribus.

Var. 3. foliis longioribus magis acuminatis.

Hab. Kerguelen's Land; var. 1, boggy places, common (barren). Falkland Islands; var. 2, (barren), *Dr. Lyall*; var. 3, growing in waters (barren).

Caules fluitantes, biunciales ad semipedales, ramosi, fastigiati; *rami* simplices, ascendentes. *Folia* laxe imbricata, plus minus falcato-secunda, rigidula, crassiuscula, opaca, margine valde incrassata, nervo continuo exarata, juniora intense viridia, cætera lurido-viridia, interdum fuscescentia, inferiora nisi nervus margoque incrassata plerumque tabescentia. (Cætera desunt.)

In the leaves this moss has a close affinity with *Cinclidotus*, but the aspect is that of *Hypnum ruscifolium*.

Plate CLV. *Fig.* III.—1, plant of the natural size; 2 and 3, leaves; 4, apex of ditto:—*magnified.*

16. Hypnum *filicinum*, Dill. Linn.; *Hedw. Sp. Musc.* p. 258. t. 76. *Hook. et Tayl. Musc. Brit.* p. 183. t. xxvi. *Fl. Antarct.* pt. 1. p. 141.

Var. 2. robustius, foliis elliptico-lanceolatis angustioribus.

Var. 3. omnia var. 2, sed foliis vix secundis.

Var. 4. foliis vix secundis latioribus erectis acuminatis.

Hab. Falkland Islands; var. 1, rocky fresh-water streams, and wet sandy places; var. 3, *Dr. Lyall.* Hermite Island; Cape Horn; var. 4, wet rocks and sandy places. Kerguelen's Land; var. 2, boggy places. (barren).

These varieties are all very similar to the plant mentioned in the first part of this work.

17. Hypnum *paradoxum*, Hook. fil et Wils.; caule repente subpinnato, foliis falcato-secundis ovato-lanceolatis acuminatis striatis serrulatis ruptinerviis, seta scabra, theca cernua obovato-oblonga. (Tab. CLV. Fig. II.)

Var. β. foliis laxe imbricatis substriatis, theca ovata, operculo conico.

Hab. Hermite Island, Cape Horn; var. β. on moist rocks and at the roots of trees; scarce.

Caules 2–3-unciales, rami ascendentes. *Folia* falcato-secunda, plicato-striata, serrulata, nervo ultra medium producto, luteo-fusca, subspadicea, in var. β. læte viridia. *Seta* semiuncialis, brunnea. *Theca* horizontalis, turgida, sub ore contracta, rufa. *Peristomium* externum ferrugineum, internum flavum.

This moss resembles *H. aduncum* in everything but the scabrous seta, and the serrulate leaves; the var. β again approaches very nearly to some varieties of *H. velutinum*.

Plate CLV. *Fig.* II.—1, plant of the natural size; 2 and 3, leaves; 4 and 5, thecæ; 6, peristome:—*magnified*.

18. Hypnum *fluitans*, Linn.; *Hedw. Musc. Frond.* vol. iv. p. 36. *Fl. Antarct.* pt. 1. p. 141.

Hab. Hermite Island, Cape Horn, in bogs, very common by the margins of mountain lakes. In fruit amongst wet stones.

Also found, but barren, in Campbell's Island.

19. Hypnum *aduncum*, Dill. Linn.; *Hedw. Musc. Frond.* vol. iv. t. 24. *Hook. et Tayl. Musc. Brit.* p. 186. t. 26.

Var. ε. *revolvens*, Bridel, *Bryol. Univ.* *Hook. et Tayl. l. c.*

Hab. Hermite Island, Cape Horn, (barren).

20. Hypnum *falcatum*, Bridel, *Bryol. Univ.* vol. ii. p. 526. *Schwaegr. Suppl.* II. vol. i. p. 162. t. 145.

Hab. Falkland Islands, common in watery places, rare in fruit.

Apparently the moss mentioned by Gaudichaud under the name of *H. aduncum*, to which indeed it is nearly allied. It differs from *H. fluitans*, in its very strong, often percurrent nerve. The leaves vary in length.

21. Hypnum *uncinatum*, Hall.; *Hedw. Musc. Frond.* vol. iv. t. 25. *Hook. et Tayl. Musc. Brit.* p. 187. t. xxvi.

Hab. Kerguelen's Land, in bogs, not uncommon (barren). Hermite Island, Cape Horn, also in wet places.

g. *Foliis secundis enervis.*

22. Hypnum *lithophilum*, Hornschuch; ramis elongatis, foliis erecto-patentibus secundis siccitate erectis ellipticis acutiusculis (rameis elliptico-oblongis obtusiusculis) concavis margine reflexis tenuissime lineari-areolatis, perichætialibus erectis. H. lithophilum, *Hornschuch, in Endlich. et Mart. Flora Brasil.* p. 84, in part.

Hab. Hermite Island, Cape Horn; with *H. amœnum* (barren).

In the Hookerian Herbarium we find a Brazilian specimen, apparently authentic, of *H. lithophilum*, labelled "supra lapides rivulorum in novo Friburgo", but consisting of two different species mixed together; and as the description in Fl. Bras. appears to have been drawn up from both, we append a diagnosis of the other species.*

* Hypnum *succedaneum*, nobis; foliis laxe imbricatis sicco ac humido pariter patulis subsquarrosis late ovatis concaviusculis margine subreflexis, areolis paralellogrammis, perichætialibus longioribus apice subsquarrosis.

Hab. Brazil, Province of Rio, New Friburg, *Martius*.

Our specimens agree with *H. lithophilum*, except that their branches are more elongated and the leaves faintly two-nerved at the base. A Brazilian specimen from Raddi corresponds with the *H. succedaneum*, which is allied to *H. molle*.

23. Hypnum *micans*, Wils.; in *Hook. Brit. Flora*, v. 2. p. 83. *Engl. Bot. Suppl.*

Var. *laxum*, foliis secundis patentibus ellipticis concavis serrulatis enerviis.

Hab. Hermite Island; on moist places in the woods, and on the hills.

Caules semiunciales, prostrati, parce ramosi; *rami* graciles.

This variety is allied to *H. gracile*, nobis, but differs in the reticulation of the leaves, and in their margins being recurved at the base.

24. Hypnum *amœnum*, Hedw., *Sp. Musc.* p. 292. t. 77. Isothecium amœnum, *Brid. Bryol. Univ.* vol. ii. p. 882.

Hab. Hermite Island; on wet rocks by streams of water, generally in woods, growing in patches, rare in fruit.

Allied on the one hand to *H. tenuirostre*, Hook. (Musc. Brit.), and on the other to *H. leptorhynchum*, Schwaegr. From the first of these it differs in the longer more attenuated circinate leaves; from the latter in its larger size and in the elliptical shape of the lower part of the leaf, which is not reflexed at the margin. The operculum, as in those species, has a long slender beak and is somewhat longer than the capsule.

25. Hypnum *leptorhynchum*, Brid.; *Schaegr. Suppl.* I. v. 2. p. 295. t. 93. *Fl. Antarct.* pt. 1. p. 140.

Hab. Hermite Island; very common on the rocks and banks, and on trunks of trees, taking the place of *H. cupressiforme*, which, strange to say, has not hitherto been found in any part of Fuegia or the Falkland Islands.

30. HOOKERIA, *Sw.*

a. *Foliis marginatis enerviis.*

1. Hookeria *apiculata*, Hook. fil. et Wils.; caulis compresso subramoso, foliis distiche imbricatis rotundatis apiculatis marginatis enerviis siccitate undulatis, seta scabriuscula, capsula cernua, calyptra pilosa. (Tab. CLV. fig. VI.)

Hab. Hermite Island; on moist shady rocks near the sea (barren), forming green tufts.

Caules steriles unciales, erecti, densius cæspitosi, parce ramosi, inferne radiculis nigris obsiti, ramis erectis compressis; fertiles procumbentes, humiles, vix semiunciales. *Folia* laxe imbricata, lateralia patentia, cætera appressa, rotundato-ovata, apiculata, rigidiuscula, marginata, enervia, siccitate paulo undulata, apice subinde denticulata, areolis majusculis hexagonis; perichætialia erecta, minora, ovato-lanceolata, acuta. *Seta* scabriuscula, 2–3 lin. longa, flexuosa. *Capsula* cernua vel horizontalis, ovata, subapophysata. *Operculum* basi hemisphærico-conicum, rostratum, capsula paulo brevius, rostro recto. *Calyptra* parva, pilosa, albida. *Florescentia* dioica.

Allied to *Hookeria asplenioides*, Schwaegr., but smaller, and having the margin of the leaves thickened and undulated when dry. Described from fertile specimens, gathered on the bark of trees, in Tasmania, by Mr. Gunn.

Plate CLV. *Fig.* VI.—1, tuft of the natural size; 2 and 3, leaves:—*magnified*.

b. *Foliis marginatis evanidinerviis.*

2. Hookeria *Dicksoni*, Hook. in *Brewst. Edinb. Journ. of Science*, vol. 2. p. 226.

Hab. Falkland Islands; on shady clay-banks near the sea, at Port Louis (barren). Hermite Island; common on mossy banks and on the trunks of old trees in the woods of evergreen beech, abundant in fruit.

Very closely allied to *Hookeria pulchella*, nobis (part 1. p. 142. t. lxii); but the leaves are more erect, less crowded, acuminated, with larger reticulations, thecæ larger and decidedly cernuous. The calyptra in both these species is fringed at the base.

3. Hookeria *flaccida*, Hook. fil. et Wils.; caule debili elongato erecto subramoso, foliis imbricatis erecto-patentibus ellipticis concavis obtusis subapiculatis integerrimis anguste marginatis evanidinerviis, seta elongata lævi, theca erecta obovato-oblonga, operculo rostrato, calyptra basi fimbriata. (Tab. CLV. fig. V.)

Hab. Hermite Island; in wet bogs on the hills, amongst other mosses and grass, very rare in fruit.

Caules unciales ad triunciales, graciles, debiles, parce subpinnatim ramosi, rufo-fusci, ramis compressiusculis. *Folia* laxe imbricata, erecto-patentia, flaccida, elliptico-oblonga, concava, obtusa, brevissime apiculata, inferiora subobovata, omnia integerrima, margine tenui cartilagineo nervoque tenuissimo sub apice evanido instructa, sordide ac pallide viridia, siccitate crispata, areolis parvulis rotundatis; perichætialin triplo minora, ovata, enervia. *Seta* uncialis, vix tortilis, rubra. *Theca* erecta, obovato-oblonga, brunnea, subapophysata, ore subpatulo. *Peristomii externi* dentes lutei, incurvi, trabeculati, linea media notati, *interni* processus albidi. *Sporæ* minimæ, luteo-virides. *Operculum* conico-acuminatum, theca paulo brevius. *Calyptra* elongato-conica, acuminata, basi fimbriata, fusca, capsulæ dimidiam partem obtegens.

A remarkably soft and delicate species, bearing much the same analogy to its congeners that *Hypnum stramineum* does to other *Hypna*.

Plate CLV. *Fig.* V.—1, plant of the natural size: 2 and 3, leaves; 4, thecæ; 5, peristome; 6, calyptra:—all *magnified*.

4. Hookeria *Magellanica*, P. Beauv.; caule ramoso erecto, foliis ovato-oblongis acuminatis marginatis evanidinerviis, calyptra basi fimbriata.

Hypnum *Magellanicum*, P. Beauv. *Æthéog.* p. 66.

Hab. Strait of Magalhaens.

An authentic specimen in Professor Arnott's Herbarium is closely allied to *Hookeria flaccida*, nobis. It differs in having narrower acuminated leaves, which do not fully recover their shape after long immersion in water.

c. *Foliis emarginatis.*

5. Hookeria *denticulata*, nobis; vid. Pt. I. *l. c.* 145. tab. lxii. f. 2.

Hab. Falkland Islands; in tufts of *Riccia* and *Jungermannia*, on rocks near the sea, frequent (barren). Hermite Island, Cape Horn; on the wet ground in woods, not uncommon (also barren).

6. Hookeria *cristata*, Hedw.; *Sp. Muse.* p. 211. t. 49. *Schwaegr. Suppl.* t. 278. A.B.

Hab. Hermite Island, Cape Horn.

A solitary barren stem of this occurs in the collection of Hermite Island plants.

31. HYPOPTERYGIUM, *Bridel.*

Our reasons for not having previously admitted this genus will be found in the former portion of this work. We have seen since, that the male flowers are occasionally, though rarely, inserted beneath the accessory leaves, and

J. H. H. del. W. Evans lithog.

Reeves imp.

therefore we retain this name for a genus which certainly claims to be separated as well from *Leskia* as from *Hookeria*.

1. HYPOPTERYGIUM *laricinum*, Brid.; *Bryol. Univ.* v. 2. p. 714. Hypnum laricinum, *Hook. Musc. Exot.* t. 35. Hypnum tamariscinum, *Swartz*!

HAB. Hermite Island; in wet places on the ground, very common in the woods, forming large green patches (always barren).

Under *Leskia tamariscina* two species have been confounded by Hedwig (Sp. Musc. p. 212). The name ought to be applied to the present moss, if the inconvenience of changing names generally received did not forbid.

2. HYPOPTERYGIUM *Thouini*, Schwaegr.; *Suppl.* t. 289 (sub nom. Hypnum). Hypnum Arbuscula, *P. Beauv. Ætheog.* p. 61! Hypopterygium Thouini, *Montagne in Ann. Sc. Nat.*, Aug. 1845, p. 86.

HAB. Strait of Magalhaens; Port Famine, *Capt. King*.

Our specimens are not so large as those described by P. de Beauvois, though evidently belonging to the same species. Dr. Montagne has properly remarked that this species differs from *H. laricinum* in the flabelliform, not pinnate, disposition of its branches, which all spring from one central point and take a horizontal direction. Fertile specimens from Colehague, in Chili, have also a more pendulous oblong capsule and shorter operculum.

60 ORD. LIII. HEPATICÆ, *Juss.*

(By DR. THOMAS TAYLOR and J. D. HOOKER.)

1. JUNGERMANNIA, *L.*

(1. GYMNOMITRION, *Nees.*)

1. JUNGERMANNIA *physocaula*, Hook. fil. et Tayl.; caule gracili disperso suberecto ramoso cellulosotumente, ramis apice curvatis incrassatis, foliis laxe cellulosis imbricatis distichis concavis oblique erectis late ovatis quadrato-rotundatisve ad medium bifidis segmentis late subulatis integerrimis. Nobis in *Lond. Journ. Bot.* v. 3. p. 455. (TAB. CLVI. Fig. I.)

HAB. Hermite Island, Cape Horn; creeping through tufts of *J. densifolia*, Hook.

Caules 1–2 unc. longi, graciles, vage parce ramosi; rami solitarii v. bi-terni, pallide olivacei v. albidi, nunc rufo-brunnei, apice curvati. *Folia* tumida, arcte imbricata, cauli appressa; segmentis formæ subvariis, integerrimis. *Stipulæ* nullæ.

Allied to the Scottish *J. concinnata*, Lightf.; but readily distinguishable by the stems not being tufted, the shoots slender and flexile, the larger more cellular leaves, which are far more deeply divided, and have lanceolate segments, and by the cellular stem.

PLATE CLVI. *Fig.* I.—1, plant of the natural size; 2, portion of stem: 3, leaf:—*magnified*.

2. JUNGERMANNIA *atrocapilla*, Hook. fil. et Tayl.; caule tenuissimo procumbente implexo parce ramoso flexuoso basi longe nudo, foliis remotis erectis cauli appressis concavis late ovato-quadratis integris eroso-

emarginatis, perichætialibus majoribus imbricatis in capitulum clavatum congestis. Nobis in *Lond. Journ. of Bot.* vol. 5. p. 258.

Hab. Foul Haven, Kerguelen's Land; on clay banks, at an elevation of 600 ft.

Cæspites extensi, 1–2 unc. lati, valde inconspicui. *Caules* atri, diametro setæ equinæ, crassiusculi, subnudi, basi hic illic cicatricati, superne foliis parvis tumidis appressis remotis quasi nodosi, fertiles apices versus foliosi, e foliis perichætialibus gradatim majoribus arcteque imbricatis clavati. *Folia* late quadrata, supra medium apicibusque erosis pallida.

A remarkably distinct little species, forming very obscure black patches on the ground. Stems wiry when dry, and loosely tufted; those of the perichætium paler and olive-brown, having their apices twice as broad as any other parts of the shoot. Perichætial leaves more imbricated, rounder, broader, and more concave than the cauline, enclosing a pair of minute whitish connivent scarious scales, but without any trace of calyptra or barren pistilla.

(2. Gottschea, *Nees.*)

3. Jungermannia *lamellata*, Hook.; *Musc. Exot.* t. 49. Gottsche, Lind. et Nees; *Syn. Hep.* p. 30.

Hab. Staten Land, *Menzies*. Hermite Island, Cape Horn, in dense woods abundant.

This beautiful species is apparently peculiar to the southern extreme of the American continent.

4. Jungermannia *leucophylla*, Lehm. MS. Gottsche, Lind. et Nees; *Syn. Hep.* p. 17.

Hab. Strait of Magalhaens; *Commerson* (in Hb. Reg. Berol.).

5. Jungermannia *splachnophylla*, Hook. fil. et Tayl.; caule crasso subdisperso procumbente simplici recurvo e foliis complicatis densissimeque imbricatis squamoso dorso fibrillis squamisque densissime obsito, foliis erecto-patentibus undulato-complicatis carnosis marginibus sub-erosis, lobo ventrali oblongo-ovato, dorsali subæquali semi-ovato, ala lineari undulata. Nobis *in Lond. Journ. Bot.* vol. iii. p. 455. (Tab. CLVI. Fig. II.)

Hab. Hermite Island, Cape Horn; on the ground amongst underwood, alt. 800–1000 ft., and thence to the hill-tops.

Caules 2-unc. longi, crassi, terræ appressi, sub $\frac{1}{4}$-unc. lati, dorso densissime filamentosi, substuposi. *Folia* sordide alba, densissime imbricata et complicata, carnosa et aquosa, fragilissima, marginibus hinc sæpissime erosis, paulo incurvis, basi sese arcte amplectentia.

A very singular plant, differing in its carnose texture from all the previously described species. The leaves are so thick, brittle, and watery as to be crushed to pieces readily between the finger and thumb, whence the analysis of the dried specimens is extremely difficult.

Tab. CLVI. *Fig.* II.—1, plant of the natural size: 2, front, and 3, back view of leaf; 4, leaf from lower portion of stem:—*magnified.*

6. Jungermannia *pachyla*, Hook. fil. et Tayl.; caule cæspitoso erecto subramoso ramisque apice incurvis anguste linearibus, foliis inflatis dense imbricatis erecto-patentibus, lobis ovato-oblongis acuminatis apicibus incurvis, dorsali integerrimo dorso convexo, ventrali undulato horizontali margine anteriore basi dentato, ala anguste lineari, stipulis majoribus late ovato-quadratis bifidis segmentis lanceolatis apice incisis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 456. (Tab. CLVI. Fig. III.)

Hab. Hermite Island, Cape Horn; on the bare ground in wet places.

Cæspites extensi, laxi, lurido rufo-brunnei. *Caulis* erectus, parce ramosus, dorso radiculis fibrillosis purpureis per totam longitudinem instructus, apicibus subcurvatis. *Folia* latiuscula, concava, patentia, marginibus undulatis, crosis. *Stipularum* laciniæ sæpius inæquales.

One of the more slender species of the genus, with the leaves short and concave. Colour a dark reddish brown. The leaves are closely imbricated, the lobes uniting by one-fourth of their length. The smaller lobe is folded at the margin, and receives in the sinus thus formed a similar fold of the leaf above; its inner rounded margin is sharply inciso-dentate. Specifically this is remarkably distinct from any of its congeners, and like the former, is rather an abnormal form.

PLATE. CLVI. *Fig.* III:—1, plant of the natural size: 2 and 3, back and front views of leaf and stipule; 4, leaf with the stipule removed, showing the form of the smaller lobe; 5, stipule;—*magnified*.

7. JUNGERMANNIA *laminigera*, Hook. fil. et Wils.; caule cæspitoso suberecto ramoso planiusculo, foliis imbricatis patentibus croso-ciliatis subter lamellatis marginibus lamellisque undulatis ciliato-dentatis, lobo ventrali lanceolato basi bilobo, dorsali semi-cordato, stipulis majoribus late rotundato-quadratis 4–5-fidis ciliatis, calyce terminali oblongo compresso spinuloso ore laciniato ciliato obscure bilobo. Nobis *in Lond. Journ. Bot.* v. 3. p. 456. (TAB. CLVI. Fig. IV.)

HAB. Hermite Island, Cape Horn; on the ground in the woods, abundant.

Cæspites laxi, superne pallide flavo-virescentes, inferne sordide brunnei. *Caules* 1–3 unc. longi; ramis erectis, subfastigiatis. *Folia* patentia, dorso carinis lamellisve plurimis cristatis infra apicem evanidis ornata, versus apices setosa, marginibus creberrime spinuloso-dentatis. *Stipulæ* majusculæ, dorso basi obscure lamellatæ, segmentis linearibus subobtusis, marginibus recurvis ciliato-dentatis. *Calyx* oblongus, ¼-exsertus, pallidus, extus spinulosus, vix lamellatus. *Seta* uncialis. *Capsula* cylindracea.

This a good deal resembles the *J. lamellata* (v. supra), but is more robust though smaller, the lobes of the leaves are more united throughout their whole length and the stipules are 4–5-fid. It varies much in size, some of our specimens being hardly an inch long.

PLATE CLVI. *Fig.* IV.—1, plant of the natural size; 2, upper, and 3, under surface of the leaf; 4, stipule; 5, calyx:—*magnified*.

(3. PLAGIOCHILA, *Nees et Mont.*)

8. JUNGERMANNIA *ansata*, Hook. fil. et Tayl.; caule gracili laxe cæspitoso elongato subramoso, foliis laxe imbricatis planis erectis appressis secundis oblique rotundatis basi decurrentibus integerrimis fuscis. Nobis *in Lond. Journ. Bot.* v. 3. p. 457. (TAB. CLVI. Fig. VI.)

HAB. Falkland Islands; amongst moss on the hills, abundant.

Cæspites laxi, inter muscos implexi, pallide brunnei. *Caules* flexuosi, graciles, tenues, vix ramosi, *Folia* submembranacea, integerrima, rotundata, erecta, cauli appressa, hinc homomalla, margine anteriore obscure recurvo, posteriore decurrente.

In habit resembling the *J. colorata*, Hook. (v. infra), but the stems are more elongated, and the leaves quite entire and free, not united into opposite pairs at their bases. The same characters distinguish it from the *Pl. Brunii* of Java, which further has heteromallous leaves. The trivial name alludes to the produced lower margin of the rounded leaf forming a handle.

PLATE CLVI. *Fig.* VI.—1, plant of the natural size; 2 and 3, front and back view of a leaf:—*magnified*.

9. JUNGERMANNIA *uncifornis*, Hook. fil. et Wils.; caulibus cæspitosis subsimplicibus erectis apice

plerumque curvatis, foliis crassiusculis laxe imbricatis erectis secundis appressis oblique ovato-rotundatis, margine inferiore gibboso obscure sinuato-dentato superiore incurvo basi celluloso. Nobis *in Lond. Journ. Bot.* v. 3. p. 457. (Tab. CLVI. Fig. V.)

Hab. Hermite Island, Cape Horn; on the trunks of trees near the ground.

Cæspites 2–4 unc. lati, rufo-brunnei. *Caulis* ½ unc. longus, apice strictus v. sæpius curvatus, nunc hamatus. *Folia* e basi caulis gradatim majora, imbricata, homomalla, compressa, margine superiore incurvo, plica tumida elongata, inferiore tumido obscure et obtuse sinuato; cellulæ minimæ, densæ, nisi ad basin foliorum ubi majores pallidioresque evadunt, maculam latam efficientes.

A species allied to the *J. biserialis*, L. and L., of Tasmania, but less than half the size, with more minute denticulations to the leaves, which are widely ovate, not round or decurrent at the anterior margin, nor bispinous at the apex.

Plate CLVI. *Fig.* V.—1, plant of the natural size; 2, front, and 3, back view of leaf and portion of stem; 4 and 5, similar views of leaves removed from the stem;—*magnified*.

10. Jungermannia *Magellanica*, Lindb.; *Sp. Hep.* p. 164. *Gottsche. Lindb. et Nees, Syn. Hep.* p. 53. Mont. *in Voy. au Pole Sud, Bot. Crypt.* p. 271.

Hab. Strait of Magalhaens, St. Nicholas Bay; *M.M. D'Urville et Jacquinot.*

We owe our acquaintance with this plant to the liberality of our learned friend M. Montagne, who most generously has communicated to us his own examples of such Antarctic species as we desired for comparison or examination, unhesitatingly confiding his unique specimens to the care of the post-office, that we might profit to the fullest by his labours, and avoid unnecessary errors. It differs from our *J. unciformis* in the larger and narrower leaves, which are acute and serrato-dentate along the inner margin.

11. Jungermannia *duricaulis*, Hook. fil. et Tayl.; caulibus cæspitosis duris robustis flexuosis erectis ramosis, foliis amplis subimbricatis patentibus oblique ovato-cordatis basi decurrentibus argute denticulatis, basi postica porrecta verticali, margine inferiore lente recurvo. Nobis *in Lond. Journ. Bot.* v. 3. p. 458. (Tab. CLVI. Fig. IX.)

Hab. Hermite Island, Cape Horn; abundant, in the woods.

Species insignis. Cæspites laxi, majusculi; externe pallide sed luride olivacei. *Caules* 4 unc. longi, irregulariter ramosi, ramis compressis. *Folia* ½ unc. longa, arcte laxiusve imbricata, marginibus dorsalibus parium suboppositorum rotundatis postice porrectis appressis carinamque cauli quasi efficientibus; margine superiore paulo incurvo, marginibus omnibus minute sed creberrime et regulariter denticulatis. *Perigonia* in spicam brevem terminalem disposita.

Most nearly related to the *Pl. flaccida*, Lindb., of St. Vincent, which has a very similarly hard and woody stem but the present may be known by the greater breadth of its branches and foliage, by its more compound ramification and the minute denticulation of its leaves.

Plate CLVI. *Fig.* IX.—1, plant of the natural size; 2, stem and opposite pair of leaves; 3, leaf:—*magnified*.

12. Jungermannia *asplenioides*, Linn.; *Sp. Pl.* p. 1597. Mont. *Voy. au Pole Sud, Bot. Crypt.* p. 268.

Hab. Strait of Magalhaens; *D'Urville.*

We have seen no Fuegian specimens of this species. Those M. Montagne has examined, are in a very unsatisfactory state.

13. JUNGERMANNIA *sphalera*, Hook. fil. et Tayl.; caule laxe cæspitoso erecto basi ramoso apice incurvo, foliis vix imbricatis subhorizontaliter patentibus secundis siccitate suberectis late oblique ovato-rotundatis acutis, apice inæqualiter bifido v. bidentato, margine superiore incurvo integerrimo, inferiore planiusculo dentato laxe celluloso. Nobis *in Lond. Journ. Bot.* vol 3. p. 458. (TAB. CLVI. Fig. VIII.)

HAB. Hermite Island, Cape Horn; growing amongst mosses in the woods.

Cæspites laxi, pallide olivacei. *Caules* 1–2 unc. longi, raro in ramos 2–3 erectos divisi. *Rami* compressi, recti v. curvati, apicibus rotundatis. *Folia* remotiuscula, madore patentia, sed secunda, apicibus subrecurvis, basi contracta, margine inferiore grosse irregulariter serrato.

Nearly allied to *J. uncialis*, but taller, with the leaves more remote, less imbricated and secund, more loosely cellular and not so strongly dentate. When moistened the differences are more apparent, the leaves in particular of *J. sphalera* being distinctly narrowed at the base,

PLATE CLVI. *Fig.* VIII.—1, plant of the natural size; 2 and 3, front view of leaf, and portion of stem; 4, the same detached from the stem:—*magnified*.

14. JUNGERMANNIA *uncialis*, Hook. fil. et Tayl.; caule breviusculo cæspitoso suberecto v. prostrato et ascendente ramoso, foliis imbricatis erecto-patentibus concavis late ovatis acutis argute irregulariter ciliato-dentatis sublaxe cellulosis, margine inferiore subrecurvo, calyce majusculo terminali compresso late obovato, ore oblique subrotundato dentato-ciliato. Nobis *in Lond. Journ. Bot.* vol. 3. p. 459. (TAB. CLVI. Fig. VII).

HAB. Hermite Island, Cape Horn; on damp rocks and the trunks of trees.

Cæspites late extensi, pallide flavo-virescentes. *Caules* vix 1 unc. longi, subprostrati, rarius erecti, vage ramosi, ramis fructiferis subfastigiatis. *Folia* vix decurrentia, perichætialia calyce ½ breviora. *Calyx* obovato-cuneatus, compressus, ore obtuse rotundato, oblique fisso, serrulato. *Capsula* oblongo-sphærica, vix exserta. *Perigonia* in spicas breves secus ramos disposita.

In habit the present approaches the African *P. sarmentosa*, Lindb., but in character it is more nearly allied to our Tasmanian *J. aculeata*. The former, whose fructification is unknown, has larger and more rounded leaves. The *J. aculeata* is a much larger plant; its leaves have a narrower base, and their superior margin is recurved with a broader fold, the denticulation is coarser, and calyx shorter, being scarcely exserted beyond the perichætial leaves; above all, the cellulation of the *J. uncialis* is much coarser though belonging to a smaller plant.

PLATE CLVI. *Fig.* VII.—1, plant of the natural size; 2, stem, perigonium and leaves; 3, front, and 4, back view of portion of stem and leaf; 5, calyx and capsule:—*magnified*.

15. JUNGERMANNIA *Jacquinotii*, Mont., *in Voy. au Pole Sud, Bot. Crypt.* p. 273.

HAB. Strait of Magalhaens; *D'Urville*.

A very different plant from any collected by the Antarctic Expedition.

16. JUNGERMANNIA *minutula*, Hook. fil. et Tayl.; cæspitosa, caule brevissimo erecto parce ramoso, foliis imbricatis erectis appressis obovato-rotundatis convexiusculis, margine anteriore subdecurrente posteriore recurvo, supremis majoribus denticulatis. Nobis *in Lond. Journ. Bot.* vol. 3. p. 459. (TAB. CLVII. Fig. I).

HAB. Kerguelen's Land; on the ground and on moist rocks.

Cæspites late extensi, atro-virides. *Caules* erecti, crassiusculi. *Rami* primarii vix ½ unc. longi. *Folia* inferiora minuta, subintegerrima, caule vix latiora, gradatim majora, superiora arctius imbricata, in capitulum compressum dilatatum congesta, superiora crenato-denticulata, omnia crassa, obscure cellulosa; cellulis parvis, opacis, marginalibus conspicuis.

Each branch is short and bears but few pairs of leaves:—these are narrow at the base, gradually widening upwards to the top of the branches, where they are collected into a flattened head three or four times wider than the inferior part of the shoot. This resembles in general appearance the *P. gusilla*, Mont. (of Tasmania), but is more minute, has not curved stems, there are fewer leaves on the shoots, and the anterior margin of the leaf is decurrent.

PLATE CLVII. *Fig.* I.—1, plant of the natural size; 2 and 3, front and back views of leaf and portion of stem:—*magnified.*

17. JUNGERMANNIA *heterodonta*, Hook. fil. et Tayl.; cæspitosa, caule erecto v. prostato ramoso, ramis ascendentibus subfastigiatis, foliis erecto-patentibus late ovatis obovatisve grosse inæqualiter eroso-dentatis margine superiore decurrente, inferiore apice obscure bifido, calyce terminali foliis perichætialibus breviore angustioreque obovato-rotundato, ore contracto æquali truncato ciliato-dentato. Nobis *in Lond. Journ. Bot.* vol. 3. p. 460. (TAB. CLVII. Fig. II).

HAB. Kerguelen's Land; on moist rocks near the sea.

Cæspites late extensi, rupibus appressi, kete olivacco-virides. *Caules* sub 2 unc. longi, irregulariter vage ramosi. *Folia* subarcte imbricata, oblique rotundate, apice latiuscula, dentibus marginalibus, nunc manifesto nunc obscure bifida. *Calyx* perichætio brevior, obscure bilabiatus; labiis rotundatis, crenatis et minute ciliatis.

Allied to the *P. sciophila* of Nepaul, which has emarginato-dentate leaves, but from which the present may be distinguished by its smaller size, erect growth, and closely imbricated foliage, which is more toothed. The perigonia, with which the Antarctic species is supplied, are in the form of a narrow spike, whose leaves are minute, erect, imbricated, and bidentate with somewhat squarrose apices.

PLATE CLVII. *Fig.* II.—1, plant of the natural size; 2, leaf and portion of stem; fig. 3, ditto removed from stem; 4, calyx:—*magnified.*

18. JUNGERMANNIA *Chonotica*, Tayl.; cæspitosa, surculis erectis subramosis complanatis basi nudiusculis, foliis imbricatis erecto-patentibus oblongo-rotundatis basi angustatis convexis, marginibus recurvis spinoso-dentatis. Tayl. *in Lond. Journ. Bot.* vol. 5. p. 260.

HAB. Chonos Archipelago; *C. Darwin, Esq.*

Cæspites pallide fulvi. *Caules* 2–3 unc. longi, dendroidei, v. nudi basique simpliciusculi. *Perigonia* parva, brevia, in spicam linearem arcte imbricatam disposita, follolis parvis tumidis denticulatis.

Resembles the *P. fasciculata*, Lindb., of New Holland and Lord Auckland's group; the shoots however are much narrower, leaves shorter, more distinctly and minutely toothed, the branches fascicled and the cells of the leaves much more minute.

19. JUNGERMANNIA *distinctifolia*, Tayl. *l. c.*; Lindb. *Sp. Hep.* p. 17. t. 3. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 30.

HAB. Staten Island; *Menzies in Herb. Hook.*

We have not seen specimens of this from the Antarctic Expedition. It is also a native of Jamaica and the Brazils.

(4. JUNGERMANNIA, *L. et auct. recent.*)

20. JUNGERMANNIA *colorata*, Lehm. *in Linn.* vol. 4. p. 366. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 86. *Fl. Antarct.* Pt. I. p. 140.

J. D. H. del. W. Buch lith.

Reeve imp.

HAB. Hermite Island, Cape Horn; from the sea to the mountain-tops. Falkland Islands; on the hills. Kerguelen's Land; particularly abundant on the ground, on the hills.

Also found in New Holland, Tasmania, and New Zealand, Lord Auckland's group, the Cape of Good Hope, and Juan Fernandez. In the Falkland Islands it forms large black patches on the alpine rocks, resembling an *Andræa*.

21. JUNGERMANNIA *byssacea*, Roth; *Cat. Bot.* vol. 2. p. 158. *Engl. Bot.* t. 2463.

HAB. Falkland Islands; amongst mosses on the hills.

22. JUNGERMANNIA *bicuspidata*, Linn.; Hook. *Brit. Jung.* t. 11. *Engl. Bot.* t. 2239.

HAB. Falkland Islands; on moist rocks.

One of the, comparatively speaking, few *Hepaticæ*, which, according to the modern limitation of species, is acknowledged to be a cosmopolite.

23. JUNGERMANNIA *rigens*, Hook. fil et Tayl.; minima, laxe cellulosa, cæspitosa, caule prostrato subpinnatim ramoso, ramis erectis, foliis laxe imbricatis suberectis concavis late oblongis bifidis, segmentis incurvis late subulatis integerrimis, stipulis ovato-rotundatis concavis bifidis segmentis late subulatis integerrimis. Nobis *in Lond. Journ. Bot.* vol. 3. p. 461. (TAB. CLVII. Fig. III).

HAB. Falkland Islands; on moist maritime rocks.

Cæspites parvi, pallide olivaceo-flavescentes. *Caules* 2–3 lin. longi, carnosiusculi, simplices v. ramosi. *Folia* sursum gradatim minora, imbricata, tumida, hinc caulis submoniliformis. *Stipulæ* pro planta amplæ, foliis consimiles, ad medium v. supra medium bifidæ.

Allied to the British *J. Francisci*, Hook., but more minute, the leaves more concave, and the stipules of a very different form.

PLATE CLVII. *Fig.* III.—1, plant of the natural size; 2, portion of stem, leaf, and stipule; 3, stipule, removed:—*magnified*.

24. JUNGERMANNIA *tubulata*, Hook. fil. et Tayl.; parvula, caule laxe cæspitoso procumbente ramoso, foliis laxis suberectis oblongis bifidis segmentis acutis acuminatisve, calyce terminali anguste lineari-elongata tubulata, basi oblongo, ore plicato minutissime denticulato, foliis perichætialibus segmentis lanceolatis integerrimis. Nobis *in Lond. Journ. Bot.* vol. 3. p. 463. (TAB. CLVII. Fig. VI).

HAB. Falkland Islands; on moist rocks near the sea.

Caules graciles, laxe cæspitosi, simpliciusculi v. ramosi, vix ¼ unc. longi, sæpissime ramulis flagelliformibus nudis aucti, (ut in *J. bicuspidata*, L.), pallide virescentes. *Folia* erecta, pallida, pellucida, basi concava, in segmentis duobus lanceolatis apice subulatis divisa, sinu angusto acuto. *Calyces* conspicui, albidi, elongati, superne subinflati et plicati, ore minutissime denticulato. *Folia* perichætialia erecta; segmentis angustis, integerrimis. *Capsula* oblonga. *Sporæ* numerosissimæ, luteo-brunneæ, subangulatæ. *Elateres* e helice duplici constantes.

So very near the European *J. bicuspidata*, as to be hardly distinguishable from it specifically: the capsules are however shorter, the perichætial leaves entire, the calyx longer, and the areolæ of the foliage smaller. The calyces are always terminal, whereas in *J. bicuspidata* they are more frequently lateral.

PLATE CLVII. *Fig.* VI.—1, plant of the natural size; 2, leaf; 3, stipule; 4, perichætium, calyx and capsule:—*magnified*.

25. JUNGERMANNIA *vasculosa*, Hook. fil. et Tayl.; flaccida, tenerrima, cæspitosa, caule procumbente subramoso, foliis imbricatis secundis erectis rotundato-quadratis, basi lato decurrente, margine integerrimo undulato, stipulis majoribus ovatis concavis bifidis, segmentis lanceolatis integerrimis v. basi utrinque unidentatis. Nobis *in Lond. Journ. Bot.* vol. 3. p. 461. (TAB. CLVII. Fig. IV).

HAB. Falkland Islands; on wet rocks near the sea, abundant.

Cæspites late extensi, 2–4 unc. lati, atro-virides. *Caulis* 2 unc. longus, parce ramosus. *Folia* laxiuscule imbricata, integerrima; marginibus subinflexis undulatis, superiore subgibboso, inferiore longe decurrente; substantia tenerrima, flaccida, cellulis majusculis. *Stipulæ* conspicuæ, caulem amplectentes; segmentis late lanceolatis, erectis, sinu obtusiusculo.

This has a good deal of resemblance to the *J. cordifolia*, Hook., of Britain, but the presence of stipules will at once distinguish the Antarctic plant. In many respects it has an equal claim to be considered a *Lophocolea* as a *Jungermannia*; on the whole, however, we incline to retain it in the latter genus.

PLATE CLVII. *Fig.* IV.—1, plant of the natural size; 2, portion of branch, with leaf and stipule; 3, stipule:—both *magnified*.

26. JUNGERMANNIA *erinacea*, Hook. fil. et Tayl.; tenerrima, cæspitosa, caule suberecto ramoso, ramis erecto-patentibus, foliis imbricatis patentibus flaccidis ciliato-dentatis apice obtusis plus minusve profunde emarginatis, lobo inferiore ovato-rotundato superiore libero ovato adpresso stipulis majoribus late rotundatis irregulariter ciliato-dentatis integris bifidisve. Nobis *in Lond. Journ. Bot.* vol. 3. p. 462. (TAB. CLXI. Fig. IV).

HAB. Falkland Islands; on moist rocks near the sea.

Pallidè olivaceo-flava. *Cæspites* laxi, extensi. *Caulis* 1½–2 unc. longus, flaccidus, ramosus, ramis subfastigiatis. *Folia* laxe imbricata, tenerrima et flaccida sed areolis minutis, apice plerumque bifida, sinu lato rotundato, ciliis marginalibus basi latiusculis sæpe repente in apicem articulatam desinentibus. *Stipulæ* rotundatæ, ambitu ciliatæ, lobulo minore foliis majores, bifidæ.

A very beautiful species, allied to our *J. diplophylla* (Pt. 1. p. 152. t. 64. f. iv); where fructification is unknown, they together appear to form as natural a genus as any which has been proposed out of *Jungermannia*, and differ from *Scapania* in the presence of stipules. The present is readily distinguishable from *J. diplophylla* by the separation of the two lobes of the leaf, by their emarginate tips, by the larger and closer ciliation of their margins and by the less deeply but more frequently divided and broader stipules.

PLATE CLXI. *Fig.* IV.—1, plant of the natural size; 2 and 3, portion of stem, leaf, and stipule; 4, stipule:—*magnified*.

27. JUNGERMANNIA *humectata*, Hook. fil. et Tayl.; laxe cæspitosa, flaccida, caule erecto parce ramoso, foliis remotis tenuibus erecto-patentibus undulatis basi amplexicaulibus ovato-rotundatis emarginatis bifidisve segmentis obtusiusculis subdivaricatis integerrimis v. utrinque dentatis, stipulis foliis consimilibus sed minoribus. Nobis *in Lond. Journ. Bot.* vol. 3. p. 462. (TAB. CLVII. Fig. V).

HAB. Falkland Islands; on wet sand by the sides of mountain-streams.

Cæspites laxi, extensi, inferne atro-brunnei; ramis paucis, erectis, pallide fusco-olivaceis. *Folia* alterna, remotiuscula, basi caulem totum fere amplectentia, late obovato-oblonga v. rotundata, bifida, sinu acuto v. obtuso.

Possibly from its rather anomalous locality, an altered state of some other species, though we cannot say of what. In the wet place of growth, erect habit and general outline of the leaf, it resembles the British *J. Igoni*,

Tayl. (*J. socia.* var., Gottsche, Lind. et Nees), differing in the paler green colour of the young shoots, in the more delicate foliage, smaller areolæ, deeper emargination and clasping leaves.

PLATE CLVII. *Fig.* V.—1, plants of the natural size; 2, stipule; 3, leaf:—both *magnified.*

28. JUNGERMANNIA *austrigena*, Hook. fil. et Tayl.; laxe cæspitosa, caule elongato ascendente subramoso, surculis incurvis, foliis imbricatis subsecundis erecto-patentibus rotundatis convexis integerrimis marginibus recurvis perichætialibus rotundatis, stipulis majoribus rotundatis, marginibus reflexis integerrimis bidentatisve, calyce terminali oblongo compresso ore subintegro trigono. *J. austrigena* et *J. cavispina*. Nobis *in Lond. Journ. Bot.* vol. 3. p. 463 et 466. (TAB. CLVII. Fig. VII. and TAB. CLVIII. Fig. V).

HAB. Hermite Island, Cape Horn; moist banks in woods (fruit). Falkland Islands, along with *J. humectata.*

Cæspites laxi, lati, pallide flavidi, virides v. atro-brunnei. *Caules* 2–3 unc. longi, vage ramosi, flexuosi, crassiusculi. *Folia* arcte imbricata, subopposita, antice decurrentia, siccitate plerumque crispata, recurva; madore suberecta, appressa, marginibus plus minusve recurvis. *Stipulæ* rotundatæ, basi utrinque decurrentes, integerrimæ v. apice bidentatæ, marginibus valde deflexis porrectis, intra margines posticos foliorum verticaliter compressæ. *Calyx* majusculus, oblongus, latiusculus, trigonus.

A very curious species, and unlike any with which we are acquainted. The habit of the Falkland Island specimens when dried, is, owing to their having grown in water, so peculiar, that we regarded them at first as a different species, which we described as *J. cavispina*, from the reflexed margins of the closely imbricating stipules, giving a grooved appearance to the back of the stem. The calyx is that of a *Lophocolea*, from which group the presence of stipules and the entire leaves remove it.

PLATE CLVII. *Fig.* VII. Falkland Island state, (sub nom. *J. cavispinæ*).—1, plant of the natural size; 2, front, and 3, back view of stem and leaf; 4, stem and stipule; 5 and 6, stipules:—*magnified.* PLATE CLVIII. *Fig.* V. (Hermite Island state).—1, plant of the natural size; 2, lateral, 3, back, and 4, front view of stem, leaf, and stipule; 5, stem and stipule; 6 and 7, stipules:—*magnified.*

29. JUNGERMANNIA *palustris*, Hook. fil. et Tayl.; caule elongato disperso flaccido ramoso, foliis laxe imbricatis erecto-patentibus tenuissime membranaceis rotundatis valde concavis marginibus incurvis medio longitudinaliter undulatis integerrimis, stipulis majoribus ovalibus cymbiformibus integerrimis. Nobis *in Lond. Journ. Bot.* vol. 3. p. 464. (TAB. CLVII. Fig. VIII).

HAB. Hermite Island, Cape Horn; on the borders of an alpine lake, growing in the water.

Caules inter *Muscos* aliasque *Hepaticas* demersas ascendentes, sparsi, 3 unc. longi; ramis erectis, flaccidissimis. *Folia* tumida, varie incurva, medio plerumque plica longitudinali notata. *Stipulæ* valde concavæ, subimbricatæ.

Allied to the British *J. Doniana*, and to the *J. involutifolia*, Mont. (v. infra), but very distinct from both. The leaves resemble those of *Hypnum cochlearifolium*, Schwaegr.

PLATE CLVII. *Fig.* VIII.—1, plant of the natural size; 2, front view of stem, leaves, and stipules; 3, back view of ditto:—*magnified.*

30. JUNGERMANNIA *involutifolia*, Mont. *in Gottsche, Nees et Lindb. Syn. Hep.* p. 81. *Voy. au Pole Sud, Bot. Crypt.* p. 260.

HAB. Strait of Magalhaens; on tufts of *Hypnum fluitans*: *M. Hombron.*

The nearest ally to this plant is *J. notophylla*, nobis.

31. JUNGERMANNIA *fulvella*, Hook. fil. et Tayl.; parvula, caule implexo procumbente ramoso, ramis cylindraceis, foliis arcte imbricatis patentibus concavis marginibus incurvis remote dentatis carnosiuscalis pellucidis laxe cellulosis caulinis oblique rotundatis, ramcis minoribus arctius imbricatis rotundatis, stipulis erectis concavis late rotundatis integerrimis v. irregulariter dentatis, calyce laterali obovato cylindraceo foliis perichætialibus integerrimis duplo longiore. Nobis *in Lond. Journ. Bot.* vol. 3. p. 464. (TAB. CLVIII. Fig. I.)

HAB. Hermite Island, Cape Horn; *in the woods on dead timber, trunks and twigs of trees; abundant.* South part of Tierra del Fuego; *C. Darwin, Esq.*

Cæspites 3 unc. lati, *pallide* fulvi. *Caulis* 1 unc. longus, pluries vage ramosus, *ramis tenuibus*. *Folia* caulina rameis laxius imbricata, basi latiora planiora, dentibus valde irregularibus. *Stipulæ* rameæ caulinis breviores, sed latiores, rariusque dentatæ. *Folia* perichætialia parva, oblonga, concava, calyce ter breviora. *Calyx* lineari-oblongus, trigonus, subtumidus, ore angustato. *Seta* ½ unc. longa. *Capsula late* oblonga.

With much the appearance of a *Herpetium*, but having no flagelliform shoots, and the leaves are irregularly dentate. It is a most distinct species.

PLATE CLVIII. *Fig.* I.—1, plant of the natural size; 2, part of stem, leaf, and stipule; 3, leaf; 4, upper leaf; 5, stipule; 6, portion of branch with leaves, calyx, seta, and capsule; 7, calyx and perichetium; 8, corolla:—*magnified*.

32. JUNGERMANNIA *obvoluta*, Hook. fil. et Tayl.; cæspitosa, caule ascendente vage ramoso, ramis cylindraceis elongatis flaccidis suberectis, foliis imbricatis patentibus membranaceis laxe cellulosis late quadratis margine incurvo undulatis bifidis sinu angusto hic illic grosse dentatis subdecurrentibus, stipulis majoribus rotundato-ovatis concavis emarginatis utrinque uni-dentatis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 80. (TAB. CLXI. Fig. I.).

HAB. Hermite Island, Cape Horn, and the Falkland Islands; *on the trunks of trees, and on the ground.*

Cæspites pallide olivacei, straminei. *Caules* ½–¾ unc. longi. *Folia* secus partem caulis superiorem involuta. *Stipulæ* emarginatæ, sinu latiusculo.

Allied to *J. oligophylla*, nob., but quite different specifically from *that*, and from any other species with which we are acquainted.

PLATE CLXI. *Fig.* I.—1, plant of the natural size; 2, portion of stem, leaves, and stipules; 3, leaf; 4, stipule:—*magnified*.

33. JUNGERMANNIA *madida*, Hook. fil. et Tayl.; cæspitosa, caule elongato planiusculo erecto ramoso, ramis erectis fastigiatis, foliis laxe imbricatis patentibus semiamplexicaulibus concavis ovato-quadratis bifidis, segmentis acutis incurvis integerrimis v. apices versus 2–3-dentatis, stipulis majoribus foliis paulo brevioribus concavis late ovatis bifidis subintegerrimis, calyce terminali cylindraceo recto apice obscure dentato, capsulæ valvis lineari-elongatis. Nobis *in Lond. Journ. Bot.* vol. 3. p. 465. (TAB. CLVIII. Fig. II).

HAB. Hermite Island, Cape Horn; *on moist banks, and in bogs on the mountains, forming dense tufts.*

Cæspites densi, 2–3 unc. lati, locis humidioribus obscure virescentes, siccis rufescentes. *Caules* 2 unc. longi. *Folia* laxe imbricata, ad ½ longitudinis bifida, minute cellulosa, integerrima v. apices versus 1–2-dentata. *Stipulæ* foliis subæquales, late oblongæ, bifidæ, segmentis obscure dentatis. *Calyx* elongatus, superne attenuatus, apice truncatus. *Capsula* elongata, cylindracea.

I

J. fulvella.

II

J. madida

III

J. squata.

IV

J. cephalia.

V

J. anatrigena.

VI

J. humilis

VII

J. ruralis.

VIII

J. caholetorum.

IX

J. textilis.

Very closely allied to the *J. serrulata*, Sw. (*Musc. Exot.* t. 38), of the West Indies, but the leaves are not so densely imbricated, are scarcely serrulate, their areolæ are more minute, and the stipules are different. When growing in moist places the plant is greener and larger, and the leaves more generally serrulate than when found in drier situations.

PLATE CLVIII. *Fig.* II.—1, plant of the natural size; 2, portion of stem, leaf, and stipule; 3, leaf; 4, stipule; 5, perichætial leaf; 6, calyx, seta, and capsule; 7, corolla; 8, capsule:—*magnified*.

34. JUNGERMANNIA *æquata*, Hook. fil. et Tayl.; caule brevi implexo procumbente ascendente ramoso flexuoso, ramis compressis curvatis, foliis imbricatis secundis appressis subopposítis rotundatis margine incurvis integerrimis crassis opacis ima basi inter se et cum stipula parva ovata bifida v. integra connatis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 465. (TAB. CLVIII. Fig. III.)

HAB. Hermite Island, Cape Horn; on the trunks of trees in the woods.

Cæspites parvi, inter *Muscos* alinsque *Hepaticas* nidulantes, rufo-brunnei. *Caules* unciales, vage sed parce ramosi, basi nudi, sursum curvati. *Folia* arcte imbricata, oblongo-rotundata, madore e marginibus incurvis tumida, opposita, basi antice connata, postice cum stipula adnata. *Stipula* ovata, bifida v. varie secta, segmentis subulatis.

The form of the leaves, their opposite arrangement and connexion in front, are similar to *J. Brankiana*, Nees, but that species is destitute of stipules.

PLATE CLVIII. *Fig.* III.—1, plant of the natural size; 2, portion of branch; 3, ditto with front view of leaf and stipule, 4 and 5, stipules:—*magnified*.

35. JUNGERMANNIA *otophylla*, Hook. fil. et Tayl.; caule debili flavido elongato subramoso, foliis oppositis secundis erecto-patentibus imbricatis flavidis et membranaceis late reniformi-rotundatis basi latissime cauli adnatis integerrimis, margine superiore basi tumido recurvo, stipulis majoribus concavis late rotundatis emarginatis integerrimis obscure sinuatisve. Nobis *in Lond. Journ. Bot.* vol. iii. p. 466. (TAB. CLVIII. Fig. IV.)

HAB. Hermite Island, Cape Horn; in alpine bogs.

Cæspites laxi, luride olivacei v. albescentes. *Caulis* gracilis, 3 unc. longus, parce ramosus; ramis erectis. *Folia* tenuissime membranacea, latissime oblonga v. rotundata, basi ad marginem anteriorem quasi auriculata. *Stipulæ* amplæ, subimbricatæ, marginibus incurvis, apicibus emarginatis, sinu lato, nunc apice sinuato.

In habit and general appearance this approaches our *J. palustris*, which inhabits similar localities, but they are in many respects widely different plants.

PLATE CLVIII. *Fig.* IV.—1, plant of the natural size; 2, front, and 3, back view of portion of stem and leaf; 4, stipule:—*magnified*.

36. JUNGERMANNIA *densifolia*, Hook., *Musc. Exot.* t. 36. Scapania? densifolia, *Gottsche, Lindb. et Nees, Syn. Hep.* p. 72.

HAB. Hermite Island, Cape Horn; in wet bogs, &c.

A very abundant species in Hermite Island.

37. JUNGERMANNIA *chloroleuca*, Hook. fil. et Tayl.; caule erecto cæspitoso parce ramoso flavido, foliis subapproximatis imbricatis patentibus ovatis v. ovato-oblongis inferne tumidis semi-amplexicaulibus bipartitis ciliato-dentatis, segmentis linearibus ligulatisve summo apice bifidis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 467. (TAB. CLXI. Fig. V.)

Hab. Hermite Island, Cape Horn; on moist banks near the sea.

Cespites subercti, flavo-virescentes. *Folia* disticha, vix imbricata, segmentis plerumque recurvis, ramis hinc (siccitate præcipue) squarrosis.

So nearly allied to the previous species that a particular description is hardly required; it differs conspicuously in the colour. These species were never seen passing into one another, and both are remarkably constant to their characters. They belong, with the *J. vertebralis*, Gottsche (Pt. 1. p. 153), of Lord Auckland's group and Tasmania, also a very closely allied plant, to a distinct section of the genus. The *J. chloroleuca* differs from *J. vertebralis* in colour, size, and different texture, also in the form of the leaves and ciliation; and from *J. densifolia*, besides the colour, mentioned above, in the denser tissue of the remote leaves, which are much broader at the base, and whose areolæ are blended together, in their long ciliation and bifid apices.

Plate CLXI. *Fig.* V.—1, plant of the natural size; 2, portion of stem and leaf:—*magnified.*

38. Jungermannia *clandestina*, Mont., *in Voy. au Pole Sud, Bot. Crypt.* p. 264. t. 16. f. 4. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 78.

Hab. Strait of Magalhaens; Port Famine and Port Gallant, *M. Hombron.*

39. Jungermannia *schismoides*, Mont., *vid.* Pt. 1. p. 150. (Tab. CLXI. Fig. IX.)

Hab. Hermite Island, Cape Horn; creeping through tufts of mosses in the woods.

The leaves of these specimens are slightly serrulate along the margins, in which respect alone the plant differs from that found in Lord Auckland's group.

Plate CLXI. *Fig.* IX.—1, plant of the natural size; 2, 3, and 4, leaves:—*magnified.*

40. Jungermannia *crebrifolia*, Hook. fil. et Tayl.; caule cæspitoso erecto ramoso, ramis suberectis, foliis carnosulis arcte imbricatis erecto-patentibus secundis concavis late ovato-rotundatis bilobis, lobis ovatis subacutis integerrimis inferiore minore basi dentato v. integerrimo, calyce minimo laterali obovato plicato, ore scarioso laciniato, laciniis lanceolatis. Nobis *in Journ. Lond. Bot.* vol. iii. p. 467. (Tab. CLVII. Fig. IX.)

Hab. Hermite Island, Cape Horn.

Dense cæspitosa, rufo-brunnea. *Caules* fere 2 unc. longi, siccitate fragiles, irregulariter repetitim ramosi, ramis superne paulo incrassati. *Folia* arcte imbricata, valde concava, marginibus apicibusque madore erectis, lobo superiore majore, inferiore basi supra caulem producto, integerrimo v. uni-dentato. *Calyces* minuti, valde inconspicui, ore albido scarioso.

Closely allied to the *J. cryptodon*, Wils. MS., of the Andes of Colombia, which has a similarly toothed lower lobe of the leaf, equally produced at the base across the stem. The present is a larger plant, with more imbricated and erect leaves, their lower lobe smaller, and the produced portion larger in proportion.

Plate CLVII. *Fig.* IX.—1, plant of the natural size; 2 and 3, leaves:—*magnified.*

41. Jungermannia *humilis*, Hook. fil. et Tayl.; parvula, caule implexo procumbente radicante ramoso, foliis subimbricatis erecto-patentibus secundis rotundatis concavis integerrimis crassiusculis, stipulis minutis ovatis integris v. bifidis segmentis uridentatis v. irregulariter sectis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 468. (Tab. CLVIII. Fig. VI.)

Hab. Kerguelen's Land; on tufts of *Azorella Selago.*

Cespites lati, pallide flavo-olivacei. *Caulis* vix uncialis, irregulariter ramosus. *Folia* laxe imbricata, basi late caule adnata sed non decurrentia, patentia, homomalla. *Stipulæ* cauli æquilatæ, varie sectæ, emarginatæ, bifidæ v. irregulariter sinuato-dentatæ.

Allied to *J. turgescens*, nobis (Pt. 1. p. 150, t. lxiv. f. 2.), of Lord Auckland's group; but the present may be readily distinguished by its smaller size, more olive colour, its toothed stipules, more patent and differently shaped leaves, whose attachment is also different, and which are not decurrent; and by their larger areolæ.

PLATE CLVIII. *Fig.* VI.—plant of the natural size. 2, stem, back view of leaf and stipule; 3, front view of leaf; 4, stipule:—*magnified.*

42. JUNGERMANNIA *minuta*, Crantz, *vid. Fl. Antarct.* Pt. 1. p. 152.

HAB. Kerguelen's Land; on tufts of mosses, &c., on the hills.

Also found in Lord Auckland's group, but hitherto not elsewhere in the Southern Hemisphere; nor out of Europe in the Northern.

43. JUNGERMANNIA *quadripartita*, Hook., *Musc. Exot.* t. 117. Gottsche, Lindb. et Nees; *Syn. Hep.* p. 146.

HAB. Staten Land, *Menzies* (in Herb. Hook.); Hermite Island, Cape Horn; on moist banks, *Mr. Davis.*

(5. GYMNANTHE, *Tayl.*)

44. JUNGERMANNIA *Urvilleana*, Mont., *vid. Fl. Antarct.* Pt. 1. p. 153.

HAB. Hermite Island, Cape Horn; in the woods.

Also a native of Lord Auckland's group and Tasmania.

(6. LOPHOCOLEA, *Nees.*)

45. JUNGERMANNIA *textilis*, Hook. fil. et Tayl.; caule laxe implexo prostrato parce vage ramoso plano, foliis distichis horizontaliter patentibus complanatis approximatis late ovato-quadratis apice bifidis planis laxe cellulosis segmentis subulatis acutis integerrimis, stipulis ovatis bipartitis segmentis linearibus divaricatis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 468. (TAB. CLVIII. Fig. IX.)

HAB. Hermite Island, Cape Horn; in woods. Falkland Islands; on wet rocks near the sea, very common.

Cespites late extensi, pallide sed læte flavo-virides. *Caules* 2 unc. longi, laxe intertexti, terræ appressi. *Folia* disticha, omnia horizontaliter patentia, basi lata, cauli adnata sed non decurrentia, margine superiore subrotundata inferiore recta; substantia tenera, laxe areolata. *Stipulæ* parvæ, cauli æquilatæ, bipartitæ, segmentis subulatis acuminatis. *Perigonia* nunc secus ramos obvia, plerumque apices versus; foliis arcte appressis erectis, basi tumidis.

In some particulars resembling our *J. planiuscula* (Pt. 1. p. 156. t. lxv. f. 2.), of Lord Auckland's group, which is a larger plant, with leaves rounded and otherwise of a very different form. The whole stratum is very flat and appressed, wide, of a fine shining green colour, and soft texture.

PLATE CLVIII. *Fig.* IX.—1, plant of the natural size; 2, stem and leaves; 3, stipule:—*magnified.*

46. JUNGERMANNIA *leptantha*, Hook. fil. et Tayl.; caule flaccido implexo procumbente ramoso, foliis distichis planis subimbricatis patentibus ovato-oblongis integerrimis margine superiore subrecurvo apice emarginato-bidentatis dentibus elongatis sinu rotundato, stipulis porrectis minutis bipartitis segmentis subulatis extus unidentatis 4-partitisve, calyce terminali lineari-oblongo trigono ore trifido segmentis emarginato-bidentatis serratis rarius subintegris. Nobis *in Lond. Journ. Bot.* vol. iii. p. 471. Lophocolea coadunata,

Nees, fil. Montagne in Voy. au Pole Sud, Bot. Crypt. p. 256 (*non* Jung. coadunata, *Swartz.*) (Tab. CLIX. Fig. VI.)

Hab. Hermite Island, Cape Horn; moist places in the woods.

Cæspites late extensi, plani, pallide fusco-olivacei. *Caules* 1–2 unc. longi. *Folia* vix imbricata, patentia, ovata, apicem versus dilatata et in segmenta 2 subulata subcaudata fissa, laxe cellulosa. *Stipulæ* parvæ, cauli subæquilatæ. *Folia* perichætialia erecta, lateralibus emarginatis dentatisque, intermedio seu stipulari bifido integerrimo. *Seta* uncialis. *Capsula* ovalis.

This is one of the many southern forms of *Lophocolea* nearly related to one another, and to *J. bidentata* of Europe; it differs from *J. secundifolia*, in the leaves being horizontally patent and not secund; from *J. diademata*, nob., of New Zealand, in the calyx and less spreading foliage; and from *J. physantha*, nob., of the same country, also by the totally different calyx, from all three by the divisions of the mouth of the latter organ being dentate. We are indebted to our friend M. Montagne for a specimen of his *J. coadunata*, so named by Nees, but which we do not consider to be the plant of Swartz.

Plate CLIX. *Fig.* VI.—1, plant of the natural size; 2 and 3, leaves; 4 and 5, stipules; 6, calyx, seta, and capsule:—all *magnified*.

47. Jungermannia *humifusa*, Hook. fil. et Tayl.; caule flaccido procumbente implexo ramoso, foliis approximatis subimbricatis horizontaliter patentibus planis oblongis antice gibbosis emarginato-dentatis integerrimis, stipulis bipartitis segmentis subulato-setaceis extus unidentatis quadripartitisve. Nobis *in Lond. Journ. Bot.* vol. iii. p. 472. (Tab. CLIX. Fig. V.)

Hab. Kerguelen's Land; on the rhizomata of *Pringlea*.

Cæspites lati, explanati, appressi, pallide virides. *Caulis* uncialis, irregulariter ramosus, ad stipulas radicans. *Folia* approximata, vix imbricata, basi latiora, decurrentia, sinu apice formæ irregulari. *Calyx* ovato-oblongus, trigonus; angulo unico alato, subdentato. *Perigonia* in spicas ovato-lanceolatas secus ramos obvias dispositæ, foliolis imbricatis, ventricosis.

Very nearly allied to *J. leptantha* and perhaps not distinct from it; though we have preferred separating species from such widely-severed localities as these affect, when, as in this case, they present tangible characters. Those of this species will be found in the more erect leaves, with lax areolæ, wide and decurrent bases, and more setaceous stipules.

Plate CLIX. *Fig.* V.—1, plant of the natural size; 2 and 3, leaves; 4, stipule:—*magnified*.

48. Jungermannia *alternifolia*, Hook. fil. et Tayl.; caule gracili laxe implexo procumbente parce ramoso, foliis flaccidis laxe reticulatis alternis patentibus planis triangulari-ovatis emarginatis decurrentibus segmentis spinoso-acuminatis integerrimis, stipulis minutis quadripartitis segmentis setaceis, calyce terminali triangulari-cylindraceo ore trilabiato ciliato. Nobis *in Lond. Journ. Bot.* vol. iv. p. 83. (Tab. CLXI. Fig. II.)

Hab. Falkland Islands; on moist banks near the sea.

Cæspites lurido virides, ramis substrictis. *Folia* basi decurrentia, laxe reticulata; *perichætialia* ¼ longitudine calycis, erecta, concava, subciliata. *Capsula* oblongo-rotundata.

Related to *J. humifusa*, but distinguishable by the deep division of the apex of the leaf, the longer segments, the more decurrent bases and the wider segments of the stipules. This species was erroneously described (Lond. Journ. Bot. l. c.) as a native of New Zealand; from whence we have never seen specimens.

Plate CLXI. *Fig.* II.—1, plant of the natural size; 2 and 3, branch and leaf; 4, leaf; 5, stipule:—all *magnified*.

I.

J. reclinata.

II.

J. secundifolia.

III.

J. trachyopa.

IV.

J. subviridis.

V.

J. humifusa.

VI.

J. leptantha.

VII.

J. fusco-virens.

VIII.

J. grandifolia.

IX.

J. pallido-virens.

J. D. Hooker del. W. Fitch lithog.

49. JUNGERMANNIA *divaricata*, Hook. fil. et Tayl.; caule implexo procumbente ramoso, foliis approximatis suberectis secundis e basi angusta oblongis convexis bifidis segmentis lanceolatis acuminatis divaricatis subflexuosis, stipulis bifidis segmentis subulatis extus unidentatis. Nobis *in Lond. Journ. Bot.* vol. v. p. 367. (TAB. CLXI. Fig. VIII.)

HAB. Hermite Island, Cape Horn; in tufts of mosses, &c.

Cæspites pallide flavo-virescentes. *Caules* 1 unc. longi, basin versus præcipue ramosi. *Folia* laxe imbricata, grosse reticulata, ad medium in segmenta dua acuminata divaricata fissa, margine dorsali decurrente et recurvo. *Perigonia* in spicas terminales disposita; foliolis arcte appressis, basi tumidis, antheriferis, segmentis foliis caulinis brevioribus.

Allied to *J. leptantha*, but a smaller plant, with leaves of a different shape, being narrower at the base and deeply divided beyond the middle. The stipules are bipartite.

PLATE CLXI. *Fig.* VIII.—1, plant of the natural size; 2 and 3, branch and leaf; 4, leaf; 5, stipule:—all *magnified*.

50. JUNGERMANNIA *subuletorum*, Hook. fil. et Tayl.; minima, caule cæspitoso crassiusculo prostrato ramoso, ramis ascendentibus apice recurvis, foliis approximatis subremotisve erecto-patentibus secundis subquadratis angulis obtusis integerrimis apice retusis laxe cellulosis, stipulis minutis ovatis lanceolatisve bipartitis, segmentis subulatis incurvis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 469. (TAB. CLVIII. Fig. VIII.)

HAB. Falkland Islands; on wet sand and clay-slate.

Cæspites sub 2 unc. lati, pallide flavo-virides. *Caules* breves vix ½ unc. longi. *Rami* e caule prostrato erecti, curvati, demum horizontales. *Folia* versus apices ramorum laxe imbricata, parva, madore homomalla, apice plerumque retusa v. emarginata, ramus rotundata, basi late adnata, laxe cellulosa, paria ultima sæpissima appressa, apicibus ramulorum hinc compressis. *Stipulæ* caule subangustiores.

Perhaps the most minute of the *Lophocoleæ*, from all the species of which its habit and the form of the leaves amply distinguish it.

PLATE CLVIII. *Fig.* VIII.—1, plant of the natural size; 2, portion of branch, leaves, and stipules; 3, leaf; 4, stipule:—*magnified*.

51. JUNGERMANNIA *rivalis*, Hook. fil. et Tayl.; flaccida, caule cæspitoso ascendenti v. erecto ramoso gracili, foliis distichis laxe imbricatis approximativse inferioribus remotis teneribus flaccidis oblongo-quadratis angulis obtusis integerrimis basi late adnatis decurrentibus apice retuso, stipulis ovatis bifidis segmentis integerrimis v. extus unidentatis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 469. (TAB. CLVIII. Fig. VII.)

HAB. Falkland Islands; on wet rocks, &c., near the sea, abundant.

Cæspites laxi, basi sæpe submersi, atro-fusci, superne pallide olivacei. *Caulis* 1–2 unc. longus, ramosus, ramis erectis gracilibus, laxe foliosis. *Folia* tenerrima, membranacea et flaccida, minute areolata, basi lata decurrente, oblongo-rotundata v. subquadrata, apice plerumque obscure retusa. *Stipulæ* caule vix latiores, basi subrotundatæ, v. late ovatæ, bifidæ; segmentis integerrimis uni-dentatisve.

Allied to *J. planiuscula* (Pl. 1. t. 65. f. 2), which is a larger plant, with differently shaped stipules. Also near the following, which, again, is smaller than either, with leaves of another form.

PLATE CLVIII. *Fig.* VII.—1, plant of the natural size; 2 and 3, leaves; 4 and 5, stipules:—*magnified*.

52. JUNGERMANNIA *grisea*, Nobis *in Fl. Antarct.* Pt. 1. p. 154. t. lxiv. f. 8.

Var. *β*, *laxa*; caule ramoso flexuoso, foliis laxius insertis subremotis alternantibus. (TAB. CLX. Fig. IV.)

HAB. Falkland Islands; on clay banks near the sea. Var. *β*, in similar situations.

Also a native of Lord Auckland's group.

PLATE CLX. *Fig.* IV.—1, plant of the natural size; 2, stem and leaves; 3 and 4, leaves; 5 and 6, stipules:—*magnified*.

53. JUNGERMANNIA *reclinans*, Hook. fil. et Tayl.; caule prostrato implexo ramoso, foliis imbricatis patentibus siccitate explanatis madore secundis e basi lata ovato-rotundatis integerrimis apice rotundatis v. obscure retusis, stipulis 2–4-partitis, segmentis setaceis intermediis elongatis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 470. (TAB. CLIX. Fig. I).

HAB. Falkland Islands; on wet rocks near the sea.

Cæspites laxe intertexti, pallide flavo-olivacei, inter *Muscos Hepaticasque* alias repentes. *Caules* supini, vix ½ unc. longi, parce ramosi. *Folia* margine superiore sursum producto plerumque trilobo, rarius bilobo, lobis latis obtusis, folia nunc integra. *Stipulæ* basi angustatæ, quadratæ, bipartitæ, segmentis plerumque uni-dentatis omnibus setaceis articulatis incurvis.

With much affinity to the *J. multipenna* of Lord Auckland's group; but the upper margin of the leaf is not so gibbous or produced upwards, the stipules have the inner segments straight or recurved, but not reflexed, and much more slender.

PLATE CLIX. *Fig.* I.—1, plant of the natural size; 2, stem and leaf; 3, stipule; 4, perichætium and calyx:—*magnified*.

54. JUNGERMANNIA *secundifolia*, Hook. fil. et Tayl.; parvula, caule subcæspitoso procumbente subramoso, foliis imbricatis erectis secundis oblongis emarginato-bifidis, segmentis lanceolatis integerrimis, stipulis bipartitis, segmentis inæqualiter bifidis laciniis subulato-setaceis, calyce terminali oblongo trigono, ore trilaciniato laciniis dentatis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 471. (TAB. CLIX. Fig. II.)

HAB. Falkland Islands; on tufts of mosses.

Cæspites parvi, inter *Muscos* intricati, pallide olivacei. *Caules* vix ½ unc. longi, prostrati, demum ascendentes, apicibus supinis radicantibus. *Folia* imbricata, madore erecta et secunda. *Stipulæ* amplæ, segmentis setaceis incurvis. *Calyx* majusculus, trigonus, latere inferiore latiore, ore ciliato-dentato.

This in some respects approaches the British *J. bidentata*, but is even more like *J. heterophylla*, from which it may eventually prove not distinct; its claims rest on the closely imbricated and secund leaves, and more entire segments of the stipules.

PLATE CLIX. *Fig.* II.—1, plant of the natural size; 2, apex of stem, perichætium, and calyx; 3, leaf; 4, stipule:—*magnified*.

55. JUNGERMANNIA *subviridis*, Hook. fil. et Tayl.; parvula, caule cæspitoso prostrato ramoso, foliis laxe imbricatis secundis erecto-patentibus erectisve oblique obovatis quadratisve emarginato-bifidis segmentis obtusiusculis, margine anteriore gibboso, inferiore decurrente, stipulis ovatis bifidis utrinque uni-dentatis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 473. (TAB. CLIX. Fig. IV.)

HAB. Hermite Island, Cape Horn; on the ground.

I.

J. surrepens.

II.

J. Helix.

III.

J. physcioïdes.

IV.

J. grisea.

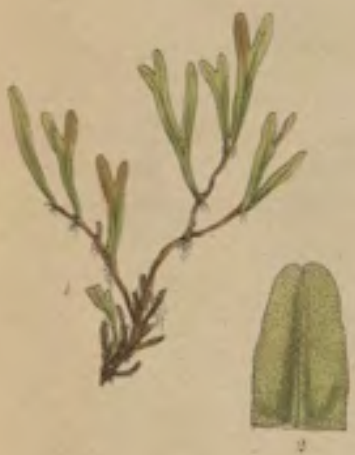
V.

J. subintegra.

VI.

J. parasitica.

VII.



J. pisicolor.

VIII.

J. almicormis.

IX.

J. prehensilis.

Cæspites lati, 2 unc. diametro, pallide virides, intricati. *Caules* vix ½ unc. longi, decumbentes v. prostrati, apicibus ascendentibus. *Folia* remotiuscula, margine superiore sursum gibboso; substantia dense cellulosa.

Closely allied to the *J. discedens*, Nees, of the East Indies; but the leaves are shorter, wider, have a deeper sinus and more acute segments; and the stipules are not so slender.

PLATE CLIX. *Fig.* IV.—1, plant of the natural size; 2, branch, with leaves and stipules; 3 and 4, leaves; 5 and 6, stipules:—all *magnified*.

56. JUNGERMANNIA *trachyopa*, Hook. fil. et Tayl.; parvula, caule implexe ramoso procumbente flaccido, foliis tenerrimis laxe cellulosis imbricatis erectis subsquarrosis latissime rotundato-quadratis profunde bitrifidis grosse inæqualiter spinuloso-dentatis, stipulis late ovatis bifidis segmentis acuminatis grosse dentatis, calyce terminali oblongo trigono, ore laciniato-dentato. Nobis *in Lond. Journ. Bot.* vol. iii. p. 471. (TAB. CLIX. Fig. III.)

HAB. Hermite Island, Cape Horn; growing in the woods on *Anthoceros punctatus*, L.

Caules vix ½ unc. longi, irregulariter ramosi, pallide virides. *Folia* arcte imbricata, in lacinias duas v. plerumque plures lanceolato-subulatas divisa. *Calyx* pro planta majusculus. *Capsula* ovalis. *Seta* cauli æquilonga.

A very distinct species from any of the foregoing, and a beautiful object under the microscope from the delicacy and reticulation of its leaves.

PLATE CLIX. *Fig.* III.—1, plant of the natural size; 2, stem and leaf; 3–6, stipules; 7, perichætium, calyx, seta, and capsule:—all *magnified*.

57. JUNGERMANNIA *triacantha*, Hook. fil. et Tayl.; caule implexo procumbente vage ramoso, foliis planis approximatis patentibus oblongo-ovatis trifidis segmentis subulato-lanceolatis, stipulis subquadratis bifidis segmentis bilaciniatis laciniis subulatis. Nobis *in Lond. Journ. Bot.* vol. v. p. 368.

HAB. Falkland Islands; on the ground.

Cæspites densi, luride olivacei. *Caulis* uncialis, ramis paucis patentibus. *Folia* basi vix imbricata, patentia, divaricata, oblonga, apices versus sinubus duobus excisis aucta; laciniis 3 subulatis, porrectis, subparallelis. *Stipulæ* liberæ, erecto-patentes, quadrifidæ, segmentis subulatis.

Most nearly allied to *L. chlorophylla*, nobis, of New Zealand, which is, however, a smaller plant and has shorter wider subsecund leaves, and rounded dentate stipules,

(7. CHILOSCYPHUS, *Nees.*)

58. JUNGERMANNIA *pallido-virens*, Hook. fil. et Tayl.; majuscula, caule implexe subramoso procumbente, foliis patentibus imbricatis late ovato-oblongis apice retusis integerrimis margine anteriore recurvo, stipulis minutis recurvis oblongis bifidis segmentis subulatis extus unidentatis quadrifidisve, calyce in ramo abbreviato terminali oblongo tri-alato compresso apice laciniato-ciliato. Nobis *in Lond. Journ. Bot.* vol. iii. p. 473. (TAB. CLIX. Fig. IX.)

HAB. Hermite Island, Cape Horn; on the ground near the sea.

Cæspites late extensi, pallide flavo-virescentes, demum fuscescentes, interdum (status minor) omnino fuscati. *Caules* 2 unc. longi, parce ramosi, ramis ½ unc. latis. *Folia* dense reticulata, areolis minutis, laxe imbricata, erecto-patentia, ope stipulæ basi connexa, apice rotundata seu truncata, unidentata v. emarginata. *Stipulæ* minimæ, caulis ½ latitudine, concavæ, recurvæ, oblongæ; segmentis setaceis extus unidentatis. *Perichætium* ramum abbreviatum terminans, e paribus 2–3 foliolorum erectorum appressorum constans, foliolo interiore 4–5-partito. *Calyx* oblongo-campanulatus, latere unico profunde fissus.

This handsome plant resembles the *C. Endlicherianus*, Nees, of Norfolk Island, more than any other species; differing, however, materially in its great size, the less rounded tops of the leaves, their more convex figure, their perfectly entire margins, and by the less laciniated stipules.

PLATE CLIX. *Fig.* IX.—1 and 2, plants of the natural size; 3, stem and leaf; 4, back view of ditto and stipules; 5, stipule; 6, perichætial leaf; 7, calyx:—*magnified*.

59. JUNGERMANNIA *grandifolia*, Hook. fil. et Tayl.; caule procumbente subsimplici laxe implexo, surculis planis, foliis arcte imbricatis patentibus quadrato-rotundatis antice basi gibbosis margineque recurvis integerrimis, stipulis minutis sub 4-laciniatis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 474. (TAB. CLIX. Fig. VIII.)

HAB. Hermite Island, Cape Horn; in the woods.

Cæspites 3–4 unc. longi, ½ unc. lati, superne pallide virescentes, inferne rufo-brunnei. *Folia* ampla, margine superiore basi præcipue recurvo, inferiore basi simplici non decurrente, flaccida, crassiuscula, pellucida, areolis parvis, rarius cum stipulis imo basi connexa, plerumque libera.

The largest and handsomest species of *Chiloscyphus*, in which the disproportion between the leaves and stipules is very remarkable. The broader and shorter leaves, their larger areolæ and more laciniated stipules, are alone sufficient to distinguish it from the former.

PLATE CLIX. *Fig.* VIII.—1, plant of the natural size; 2, back of stem, stipules, and leaves; 3, stem and leaf; 4, stipule:—*magnified*.

60. JUNGERMANNIA *fusco-virens*, Hook. fil. et Tayl.; caule implexo procumbente subramoso, surculis ascendentibus, foliis imbricatis verticalibus patentibus secundis rotundatis integerrimis, stipulis bi-quadripartitis, segmentis radiantibus, calyce in ramo brevi terminali oblongo-campanulato triplicato, ore truncato integro. Nobis *in Lond. Journ. Bot.* vol. iii. p. 474. (TAB. CLIX. Fig. VII.)

HAB. Hermite Island, Cape Horn; forming dense tufts on the tops of the mountains, alt. 1,700 feet.

Cæspites parvi, densi, rufo-brunnei, ramis junioribus virescentibus. *Caules* 2 unc. longi, secus totam longitudinem radiculas densæ fasciculatas demittentes. *Folia* planiuscula, paria opposita basi valde approximata, opaca, crassiuscula, cellulis parvis. *Stipulæ* basi breves, in segmenta dua v. plura subulata setaceave fissa. *Calyces* bini v. plures, foliis pallidiores. *Seta* fere uncialis. *Capsula* oblongo-rotundata.

The narrow segments of the differently shaped stipules and calyx afford the best means of distinguishing between this, and *J. australis*, nob., of Campbell's Island. The latter is also a smaller plant, of a darker colour. The size, large areolæ of the leaves, and their not being connate at the base with the stipules, at once remove the present from the following species.

PLATE CLIX. *Fig.* VII.—1, plant of the natural size; 2, stem and leaf; 3, back view of ditto and stipules; 4, stipule; 5, perichætium, calyx, seta, and capsule:—*magnified*.

61. JUNGERMANNIA *surrepens*, Hook. fil. et Tayl.; caule disperso simplici repente, foliis imbricatis patentibus rotundatis integerrimis stipula ovata subquadrifida connatis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 475. (TAB. CLX. Fig. I.)

HAB. Hermite Island, Cape Horn; on *J. Magellanica*.

Caules plerumque subsolitarii, supini, pallide brunnei v. albidi. *Folia* opposita, dorso ope stipulæ basi connexa. *Stipula* caule vix latior, ovata, bifida, segmentis subulatis extus dente majuscula auctis.

Near the last, but a very different plant in size, and in the disposition of its leaves.

PLATE CLX. *Fig.* I.—1, plant of the natural size; 2, back view of stem, leaves and stipules; 3, stem and leaf; 4, stipule:—*magnified.*

62. JUNGERMANNIA *retusata*, Hook. fil. et Tayl.; caule implexo procumbente subsimplici rectiusculo, foliis patentibus planis late oblongis obtusis retusisque integerrimis hinc stipulæ minutæ setaceo-bipartitæ connexis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 84. (TAB. CLXI. Fig. III. sub. nom. *J. reclinatæ.*)

HAB. Falkland Islands; on the ground.

Cæspites laxi, pallide fusco-olivacei. *Caules* unciales. *Folia* remotiuscula, late oblonga, obscure emarginata, cum stipula caule æquilata connexa.

Allied to the *Ch. integrifolius*, Gottsche, of Chili, but the leaves are more distant, shorter, and wider; the stipule more divided and the whole plant of a darker colour.

PLATE CLXI. *Fig.* III. (under the name of *J. reclinata*).—1, plant of the natural size; 2, 3, and 4, stem and leaves; 5, stipule:—*magnified.*

63. JUNGERMANNIA *horizontalis*, Hook., *Musc. Exot.* t. 96. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 178.

HAB. Staten Land; *Menzies* (in Herb. Hook.).

Not in the collections of the Antarctic Expedition.

64. JUNGERMANNIA *amphibolia*, Nees, *in Martius, Flor. Bras.* vol. i. p. 334. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 178.

HAB. Hermite Island, Cape Horn; mixed with *J. uncialis.*

Also a native of the Brazils.

(8. LEPIDOZEA, *Nees.*)

65. JUNGERMANNIA *tetradactyla*, Hook. fil. et Tayl.; *in Fl. Antarct.* Pt. 1. p. 158. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 213.

HAB. Hermite Island, Cape Horn; moist places near the sea.

Likewise found both in Lord Auckland's group and New Zealand.

66. JUNGERMANNIA *plumulosa*, Lehm. et Lindb., *Pugill.* p. 30. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 211.

HAB. Staten Land, *Menzies.* Strait of Magalhaens, *D'Urville.* Hermite Island, Cape Horn; on moist banks.

67. JUNGERMANNIA *lævifolia*, Hook. fil. et Tayl.; *in Fl. Antarct.* Pt. 1. p. 157. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 208.

HAB. Falkland Islands; on moist rocks near the sea.

First described from Auckland Island specimens; also found in New Zealand and Tasmania.

68. JUNGERMANNIA *oligophylla*, Lehm. et Lindb., *Pugill.* vi. p. 26. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 201.

HAB. Staten Land, *Menzies.* Hermite Island, Cape Horn; in moist places.

69. JUNGERMANNIA *tridactylis*, Lehm. et Lindb.? *fid.* Montagne, *in Voy. au Pole Sud, Bot. Crypt.* p. 248.

HAB. Strait of Magalhaens; *M.M. Hombron et Jacquinot.*

70. JUNGERMANNIA *filamentosa*, Lehm. et Lindb., *Pugill.* vi. p. 29. *Montagne in Voy. au Pole Sud, Bot. Crypt.* p. 246.

HAB. Strait of Magalhaens; *M. Hombron.*

A plant we do not recognize amongst the numerous forms, from Fuegia and Lord Auckland's Island, of this most difficult, and perhaps too extended group.

71. JUNGERMANNIA *Javanica*, Mont., *in Voy. au Pole Sud, Bot. Crypt.* p. 246.

HAB. Strait of Magalhaens; Port Famine, *M. Jacquinot.*

This may be one of the above enumerated species, though we have failed in identifying it. It is also a native of Java.

72. JUNGERMANNIA *chordulifera*, Tayl., *in Lond. Journ. Bot.* vol. v. p. 371. (TAB. CLXI. Fig. VI.)

HAB. Chonos Archipelago, *C. Darwin, Esq.*

A very handsome species, allied to the *J. pendulina* of New Zealand.

PLATE CLXI. *Fig.* VI.—1, plant of the natural size; 2, stem, leaves, and stipules; 4, stipule:—*magnified.*

(9. MASTIGOPHORA, *Nees.*)

73. JUNGERMANNIA *hirsuta*, Nees; *Fl. Antarct.* Pt. 1. p. 160. Sendtnera ochroleuca, *Nees, in Gottsche, Lindb. et Nees, Syn. Hep.* p. 240.

HAB. Hermite Island, Cape Horn; on roots of stunted trees, &c., alt. 1,000 feet. Falkland Islands; rocks on the hill tops, rare.

A widely distributed plant, being found in Mexico and Java, at the Cape of Good Hope, and Lord Auckland's group.

(10. RADULA, *Nees.*)

74. JUNGERMANNIA *Helix*, Hook. fil. et Tayl.; parvula, caule repente implexo subflexuoso pinnatim ramoso, foliis remotis alternis oblongis alte concavis integerrimis basi gibbosis, lobo superiori ovato-oblongo obtuso, inferioris ovati tumidi involuti apice subacuto superiori appresso. Nobis *in Lond. Journ. Bot.* vol. iv. p. 475. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 260. (TAB. CLX. Fig. II.)

HAB. Hermite Island, Cape Horn; growing with *J. colorata.*

Cæspites vix ¼ unc. lati, pallide straminei. *Folia* pauca, alterna, nisi apicem caulis versus remota.

A very distinct little species, found growing on large masses of *J. colorata*, with the purple colour of which its pale stems contrast conspicuously. It is smaller and has more tumid leaves than any of its congeners; the latter resemble in form the shell of *Helix putris*, whence the trivial name.

PLATE CLX. *Fig.* II.—1, plant of the natural size; 2, stem and leaves; 3 and 4, leaves:—*magnified.*

75. JUNGERMANNIA *physoloba*, Mont.; *Fl. Antarct.* Pt. 1. p. 161. J. flavifolia, *nobis in Lond. Journ. Bot.* vol. iv. p. 476. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 259. J. complanata, *β, Hook.* (TAB. CLX. Fig. III.)

HAB. Hermite Island, Cape Horn; on trunks of trees.

An abundant boreal plant, inhabiting Europe from Switzerland to Iceland. In the southern hemisphere it has hitherto been seen only in Lord Auckland's group and at Cape Horn. It is rather a variable species, and we have

I.
J. obvoluta.
II.
J. alternifolia.
III.
J. reclinata.
IV.
J. ennacea.
V.
J. chloroleuca.
VI.
J. chordulifera.
VII.
VIII.
J. divaricata.
IX.

described it already under two names. The leaf of these specimens is shorter, broader at the upper part and rounded, with the lower lobe shorter than is usual in *J. physoloba*. We add a figure.

PLATE CLX. *Fig.* III.—1, plant of the natural size; 2, branch and leaf; 3, leaf; 4, perichætium and calyx; 5, calyx and capsule:—*magnified*.

(11. POLYOTUS, *Gottsche.*)

76. JUNGERMANNIA *Magellanica*, Lamk. *Fl. Antarct.* Pt. 1. p. 162.

HAB. Hermite Island, Cape Horn; on trunks of trees, abundant. Strait of Magalhaens, *Commerson.* Staten Land, *Menzies.*

Also found in Campbell's Island, Tasmania, and New Holland.

77. JUNGERMANNIA *Menziesii*, Hook., *Musc. Exot.* t. 118.

HAB. Hermite Island, Cape Horn; mossy trunks of trees, wet rocks, &c.; also on the summits of the mountains. Staten Land, *Menzies.*

78. JUNGERMANNIA *palpebrifolia*, Hook., *Musc. Exot.* t. 71. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 246.

HAB. Strait of Magalhaens, *D'Urville.*

(12. FRULLANIA, *Raddi.*)

79. JUNGERMANNIA *cyperoides*, Schwaeg., *Prodr. Hep.* 14. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 420.

HAB. Strait of Magalhaens; (fid. *Schwaegrichen*).

80. JUNGERMANNIA *lobulata*, Hook., *Musc. Exot.* t. 119. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 445.

HAB. Hermite Island, Cape Horn; in woods. Staten Land, *Menzies.* Falkland Islands; on rocks near the hill tops.

81. JUNGERMANNIA *Magellanica*, Spreng., *in Annal. des Wetter. Ges.* vol. i. p. 25. t. 4. f. 10, (fid. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 447.)

HAB. Strait of Magalhaens; on *Drimys Winteri* and *Berberis ilicifolia*; *Forster* (fid. *Gottsche*).

(13. LEJEUNIA, *Spreng.*)

82. JUNGERMANNIA *subintegra*, Hook. fil. et Tayl.; caule breviusculo cæspitoso procumbente elongato subsimplici, foliis subimbricatis erectiusculis integerrimis, lobo superiore oblongo-rotundato, inferiore ¼ breviore tumido involuto-angulo superiore acuminato, stipulis caule paulo latioribus ovatis acutis integerrimis v. summo apice fissis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 477. Gottsche, Lindb. et Nees, *Syn. Hep.* p. 377. (TAB. CLX. Fig. V.)

HAB. Falkland Islands; in wet places near the sea.

Cæspites late extensi, pallide olivacei. *Caules* vix ½ unc. longi, plerumque simplices. *Folia* amplectantia, suberecta, concava, diametro caulis duplo latiora, laxe cellulosa, areolis majusculis. *Stipulæ* majusculæ, integerrimæ, v. imo apice solum fissæ, segmentis approximatis.

The great size of the stipules comparatively to the leaves and their very obscure division, afford sufficiently distinctive characters of this species.

PLATE CLX. *Fig.* V.—1, plant of the natural size; 2, stem; 3, leaf; 4 and 5, stipules:—*magnified*.

83. JUNGERMANNIA *parasitica*, Hook. fil. et Tayl.; caule subimplexo procumbente pinnatim ramoso, foliis subapproximatis patentibus valde concavis integerrimis v. obscure dentatis, lobo superiore triangulari-ovato acuto v. acuminato apice subrecurvo, inferiore oblongo acuminato, stipulis parvis obovato-quadratis bilobis lobis rotundatis integerrimis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 477. J. marginalis, *nobis, l. c.* vol. iv. p. 91. (TAB. CLX. Fig. VI.)

HAB. Hermite Island, Cape Horn; parasitical on *J. uncialis*, and amongst lichens on trunks of trees.

Caules gracillimi, minimi, oculo nudo invisibiles, pallide virides, inter *Lichenes* aliasque *Hepaticas* dispersi, $\frac{1}{2}$ unc. longi, subpinnatim ramosi, ramis suberectis. *Folia* subremota, patentia, basi latiuscula, apicibus acuminatis, incurvis v. recurvis, lobo inferiore margine involuto subundulato.

This has precisely the habit and appearance of the Irish *J. ovata*, Tayl. MSS., an equally minute parasite, with stipules of the same form. The present differs from that in the shape of the more distant leaves, which are shorter, wider at the base, and more acute above. The whole plant is of a paler colour, and from the smaller size of the cells of the leaves their tissue is more dense.

PLATE CLX. *Fig.* VI.—1, plant of the natural size; 2, stem, leaves, and stipules; 3, leaf; 4, stipule:—*magnified*.

84. JUNGERMANNIA *rufescens*, Lindb., *in Gottsche, Lindb. et Nees, Syn. Hep.* p. 366.

HAB. Staten Land, *Menzies* (in Herb. Hook.).

(14. DIPLOLÆNA, *Nees.*)

85. JUNGERMANNIA *pisicolor*, Hook. fil. et Tayl.; fronde laxe cæspitosa erecta dichotome divisa basi in stipitem teretem gradatim attenuata, lobis linearibus obtusis emarginatis uninerviis integerrimis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 478. (TAB. CLX. Fig. VII.)

HAB. Hermite Island, Cape Horn; at the bottom of an alpine lake.

Frondes e radice repente elongato erecti, sub 3 unc. lati, pisicolores, demum flavescentes, parte inferiore atre, bis terve dichotome divisi, lobis plerumque madore concavis, e margine proliferi; juniores basi rotundati, primum liberi?, demum radices emittentes. *Nervus* validus, percurrens, siccitate tenuis, albescens, madore dilatatus, fronde concolor, axillis acutis.

A very distinct and curious plant, allied to the *J. tenuinervis*, nob., of New Zealand, from which it may be known by its yellow-green colour, greater size, and taller habit, narrower and more elongated lobes, and, above all, by its being erect, differing remarkably in that respect from its northern allies, *J. Hibernica*, Hook., and *J. Lyellii*, Hook.

PLATE CLX. *Fig.* VII.—1, plant of the natural size; 2, apex of frond:—*magnified*.

(15. ANEURA, *Nees.*)

86. JUNGERMANNIA *multifida*, Linn.; *Fl. Antarct.* Pt. I. p. 166.

Var. *β. submersa*; fronde anguste lineari-elongata pellucida parce ramosa plana, ramis brevibus, perigoniis marginalibus alternis brevissimis, cellulis densis.

Var. *γ. nana*; parvula, ramosa, cellulis latioribus brevioribusque.

HAB. Hermite Island, Cape Horn; var. *α* and *β*, very abundant; var. *γ*, in a fresh-water lake amongst the mountains. Falkland Islands; abundant.

An extremely abundant plant in the southern extra-tropical regions.

87. JUNGERMANNIA *pinguis*, L. Hook. *Brit. Jung.* t. 46.

HAB. Hermite Island, Cape Horn; wet places in the woods.

88. JUNGERMANNIA *alcicornis*, Hook. fil. et Tayl.; fronde cæspitosa erecta alterne bipinnatim ramosa, caule ramisque linearibus laciniis lobisve brevibus subtruncatis, calyptris lateralibus linearibus albidis scabridis apice laceris. Nobis *in Lond. Journ. Bot.* vol. iii. p. 479. (TAB. CLX. Fig. VIII.)

HAB. Hermite Island, Cape Horn; mossy places in the woods.

Frondes cæspitosi, planiusculi, unciales, circumscriptione oblongi, juniores læte virides, demum fuscescentes et siccitate nigrescentes. *Rami* seu laciniæ basi subdichotomi, superne subpinnatim divisi; lobulis brevibus, obtusis. *Calyptræ* parte frondis inferiore laterales, valde elongatæ, cylindraceæ, basi curvatæ, carnosæ, papillosæ. *Setæ* sub ½ unc. longa. *Capsulæ* cylindraceæ.

A very beautiful little species, allied to the *J. palmata*, Hoffm., of Europe; but much more divided, with the divisions pinnate and not palmate; the lobules also are much narrower, and the calyptra is borne higher up in the frond.

PLATE CLX. *Fig.* VIII.—1, plant of the natural size; 2, ditto; 3, branch and calyptra:—*magnified*.

(16. METZGERIA, *Nees.*)

89. JUNGERMANNIA *furcata*, L. *Flor. Antarct.* Pt. 1. p. 167.

Var. *β. pubescens*, J. pubescens, *Brit. Jung.*

HAB. Hermite Island, Cape Horn; in woods, &c.; both varieties abundant.

90. JUNGERMANNIA *prehensilis*, Hook. fil. et Tayl.; fronde laxe cæspitosa, ramis erectis incurvis alatis, lobis secundis alternis pinnatis, pinnulis linearibus planis crassinerviis, calyptra e basi anguste elongato-obovata basi squamosa, perigoniis clavatis. Nobis *in Lond. Journ. Bot.* vol. iii. p. 480. (TAB. CLX. Fig. IX.)

HAB. Hermite Island, Cape Horn; on moist banks near the sea.

Frondes laxe cæspitosi, spicibus latiusculis hamatis. *Caulis* planus, brunneus, pubescens, pinnulis glabratis pallide olivaceis. *Calyptræ* brunneæ, apices versus frondis laciniarum basi superficie inferiore sitæ, hinc occlusæ, interdum binæ. *Perigonia* plantis aliis obvia, clavata, e ramo pinnato frondis constantia, lobulis pinnisve incurvis singulis antheram majusculam sphericam pedicellatam foventibus.

A remarkably distinct and fine species, most resembling the *J. eriocaula*, Hook., of New Zealand; though the frond is of a darker colour and tripinnate, the pinnules much narrower, and the whole plant more elongated and divided. The perigonia and calyptræ occupy similar positions on different plants.

PLATE CLX. *Fig.* IX.—1, plant of the natural size; 2, upper, and 3, under surface of branch with calyptra; 4, calyptra:—*magnified*.

(17. NOTEROCLADA, Tayl.)

Involucrum apicem versus frondis concavi tumidi inflatum, ore libero sub-bilobo. *Capsula* quadrivalvis, seu irregulariter rumpens, pedicellata. *Elateres* spirales seminibus immixtæ. *Antheræ* fronde immersæ. *Frons* pinnatim lobata, v. foliis basi latissimis longe decurrentibus subspiraliter dispositis ornata.—Stirps *inter* Jungermannias *foliosas frondosasque quasi media, eis tamen accedens*.—Andrecryphia, *Gottsche.*

91. JUNGERMANNIA *confluens*, Tayl. *in Lond. Journ. Bot.* vol. iii. p. 478. (TAB. CLXI. Fig. VII. in part.)

HAB. Hermite Island, Cape Horn; on the bare ground in woods. Falkland Islands and Christmas Harbour, Kerguelen's Land; on moist banks.

Laxe cæspitosa. *Frondes* flaccidissimi, 2 unc. longi, erecti. *Caulis* simpliciusculus, foliis imbricatis omnino occlusus, subrufescens, gracilis. *Folia* alterna, tenerrima, madore carnosiuscula, siccitate membranacea, ægre rescitentia, et inter se quasi confluentia (hinc frons prima visu continua et lobata), basi latissima, his latiora quam longa, longe decurrentia, fere amplexicaulia, semi-orbicularia, apice rotundata v. retusa, areolis majusculis. *Involucrum* terminale, sessile, erectum, cylindraceum, compressum, ore eroso-dentato. *Seta* uncialis, gracilis. *Capsula* ovato-globosa, irregulariter v. regulariter rumpens. *Elateres* brevissimi. *Calyptra* irregulariter rupta, parte superiore stylo persistente terminata. *Antheræ* ovato-oblongæ, biseriales, substantia frondis immersæ, liquido oleaginoso scatentes.

'A genus allied to *Fossombronia*, but the structure of the involucre, apparently formed very much out of the frond itself, is quite dissimilar. The involucre is terminal in this species, but lateral in a Brazilian congener, which was long regarded as identical, and smooth; when terminal, winged from the adhesion to its surface of the upper abbreviated leaves: it is either truncated or obscurely two-lipped. The young spores are united by fours in a transparent membrane. The drawing of the fruit is taken from Brazilian specimens of an allied species, or perhaps variety, collected by Mr. Gardner; the leaves of the Antarctic plant having become so firmly united under pressure, that no maceration would separate them satisfactorily.

In the 'Synopsis Hepaticarum' of Nees, Lindenberg and Gottsche, the generic name has been changed to *Androcryphia*, with the following explanation. "Noteroclada nomen Græce cum sonet neque Græci esse possit originis, (scil. νῶτος tergum non dat *νωτερον*, neque κλάδου sive rami character hoc loco succurrit); substituere aliud nomen ægre id quidem mecum sustinui." (*l. c.* p. 470.) The derivation of the name being, however, *νωτηρὸς* "madidus," sufficiently vindicates the adoption of *Noteroclada*.

PLATE CLXI. *Fig.* VII. (in part.)—1, Brazilian, and 2, Falkland Island specimen, of the natural size; 3, branch, leaves, &c., of the Brazilian specimen; 4, leaf of ditto; 5, corolla of ditto:—*magnified*.

(18. FOSSOMBRONIA, *Nees.*)

92. JUNGERMANNIA *pusilla*, L.

HAB. Kerguelen's Land; on banks amongst moss, &c.

Also a native of New Zealand, and probably not an uncommon plant in the temperate parts of the Southern as it is of the Northern hemisphere.

2. MARCHANTIA, *March.*

1. MARCHANTIA *polymorpha*, L. *Flor. Antarct.* Pt. 1. p. 168.

HAB. Fuegia, the Falkland Islands, and Kerguelen's Land; very abundant.

This is perhaps the most widely dispersed of *Hepaticæ*, ranging from the Arctic circle to the 57th degree of south latitude.

3. ANTHOCEROS, *Michel.*

1. ANTHOCEROS *punctatus*, L.

HAB. Hermite Island, Cape Horn, and the Falkland Islands; very common.

Cyttaria Hookeri Berk.

Coprinus fasciculus Berk.

Agaricus Glebarum Berk.

I

Sphæronema stemoneum. Berk.

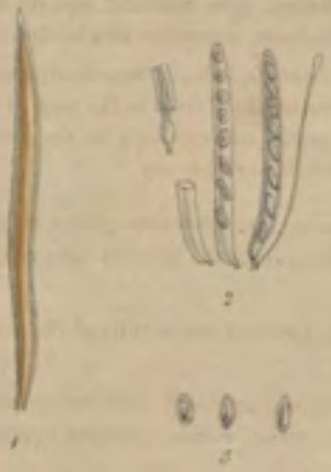
II

Sicidium Magellanicum. Berk.

III.

Lophotrichum deciplens Berk.

IV



Peziza stercorea. Pers.

V

Agaricus longinquus Berk.

Per. M.J. Berkeley del. W. Fitch lith.

LIV. FUNGI, *L.*

(By the Rev. M. J. Berkeley.)

1. AGARICUS, *L.*

1. Agaricus *longinquus*, Berk.; pileo obliquo suborbiculari albo demum pallide fusco glabro nitente, strato superiore gelatinoso, stipite curto quandoque brevissimo pallide flavo-fusco basi albo-floccoso, lamellis albis subfurcatis, interstitiis lævibus. (Tab. CLXIII. Fig. V.)

Hab. Hermite Island, Cape Horn; on dead wood near the sea.

Pileus ½ unc. et ultra latus, tenuis, oblique ovatus vel semiorbicularis, primum subtiliter pruinosus, mox autem glaberrimus, nitens; margine striato; stratum epidermale gelatinosum. *Stipes* vix lineam exsuperans quandoque obsoletus, æqualis, primum centralis, deinde excentricus aut omnino lateralis, subtiliter pruinosus, demum glaber, pallide flavo-fuscus, ad matricem basi tomentosa affixus. *Lamellæ* albæ, distantiusculæ, subfurcatæ, prope marginem præsertim subventricosæ, decurrentes, interstitiis lævibus, non reticulatis.

The nearest ally of this species is perhaps *Ag. mitis*, Pers., but the stem is not dilated upwards and the pileus is seldom perfectly lateral. Its colour, too, is different, and it has not the same opake appearance when dry. The upper stratum is gelatinous, though the pileus is dry externally; a character common to several closely allied species. It resembles also some smaller forms of *Ag. algidus*, Fr., but that is at first resupinate, whereas in the present species the stem is normal, though, as in most of the smaller excentric Agarics, occasionally obsolete. I do not know any other species with which it is necessary to compare it.

Plate CLXIII. *Fig.* V.—1, *Agaricus longinquus*, Berk., of the natural size, from rather young specimens; 2, another:—*magnified*.

2. Agaricus *exquisitus*, Berk.; minimus, tenerrimus, pileo ferrugineo subtiliter pulverulento, stipite brevi filiformi sursum incrassato pulverulento pileo concolori, basi dilatata irregulariter floccoso-membranacea, lamellis paucissimis ventricosis subliberis albo-marginatis interstitiisque lævibus ferrugineis.

Hab. Port Louis, Falkland Islands; on stems of *Chiliotrichum amelloides*.

Pileus membranaceus, 1 lin. latus, orbicularis, subtiliter pulverulentus, ferrugineus. *Stipes* 2 lin. altus, filiformis, sursum incrassatus, flexuosus, pulverulentus, pileo concolor, basi disco irregulari flexuoso-membranaceo affixus. *Lamellæ* paucæ (6), subliberæ, ferrugineo-fuscæ, interstitiis latis lævibus.

This elegant little Agaric differs from *Ag. horizontalis*, Bull., an imperfectly known species, which I have received from Dr. Léveillé and have myself gathered on the trunks of trees in the park at Burleigh, near Stamford, in being altogether more delicate, in the membranaceous pileus, and especially in the absence of smaller gills between the larger. The pileus of *Ag. horizontalis* also is much darker when dry.

3. Agaricus *Glebarum*, Berk.; pileo carnoso late umbonato glabro pallide fusco, stipite brevi glabro sursum subincrassato solido, basi mycelio floccoso affixa, lamellis latiusculis adnatis horizontalibus fulvis. (Tab. CLXII. Fig. III.)

Hab. Berkeley Sound, Falkland Islands; growing out of tufts of *Bolax* on the hills, where it endures a great degree of wet and cold.

Pileus ½ unc. latus, glaberrimus, subhemisphericus, umbonatus, pro ratione valde carnosus, senectute rugosus; nequaquam viscidus. *Stipes* ¼ unc. altus, 1½ lin. crassus, solidus, subtiliter fibrillosus, sursum incrassatus, basi ad

surculos foliaque marcida mycelio floccoso affixus. *Lamellæ* latiusculæ, horizontales, dente obscuro adnatæ, subdistantes, quandoque furcatæ. *Sporæ* oblique ellipticæ, sub lente aureo-fuscæ, nucleo parvo globoso. *Maryo* pilei interdum reflexus discusque exinde depressus, tunc etiam lamellæ, ni caute perscrutentur, liberæ habeantur.

This species is allied to *Ag. innocuus*, Tasch, and *Ag. cerodes*, Fr. From the latter it differs in its solid stem; from the former, in its decidedly carnose umbonate pileus.

PLATE CLXII. *Fig.* III.—1, *Ag. Glebarum*, Berk., of the natural size, on tufts of *Bolax*; 2, vertical section of the same; 3, spores:—highly *magnified*.

4. AGARICUS *fasciolaris*, Huds., *Fl. Angl.* p. 615. *Fries*, *Ep.* p. 222.

HAB. Hermite Island, Cape Horn; on the trunk of a dead tree, *Mr. Davis*.

A single specimen only was found.

5. AGARICUS *papilionaceus*, Bull., t. 561. f. 2. *Pers. in Freyc. Voy.* p. 168. Ag. fimetarius, *Gaud. in Ann. des Sc. Nat.* vol. v. p. 97.

HAB. Falkland Islands; *Gaudichaud*.

This species was not met with during the visit of the Erebus and Terror. *Ag. Glebarum* could not have been considered as belonging to the subdivision of *Coprini*. The pileus is said by Persoon to be broader, and the stem shorter than in Bulliard's figure.

2. COPRINUS, *Pers.*

1. COPRINUS *Flosculus*, Berk.; minimus, tenerrimus, pileo glabro ovato demum expanso hemispherico fisso sulcato vertice depressiusculo, stipite brevi, lamellis liberis paucis linearibus remotis. (TAB. CLXII. Fig. II.)

HAB. Berkeley Sound, Falkland Islands; on dung.

Pileus 1¼ lin. altus, 1 lin. latus, ovatus, profunde ex ipso vertice sulcatus, interstitiis striatis, glaber, subgriseus, margine crenulato, demum expansus, hemisphericus, fissus. *Stipes* ¼ lin. altus, filiformis, primum leviter ad basin turgidus, demum æqualis. *Lamellæ* primariæ subdecem, liberæ, remotæ, lineares. *Sporæ* ovatæ, atro-purpureæ.

A minute *Coprinus*, belonging to the same section with *Coprinus Hemerobius*, but differing from it and from the other species of the section in various characters. It resembles in habit *C. Hendersonii*, Berk., but wants the ring which is characteristic of that species.

PLATE CLXII. *Fig.* II.—1, *Coprinus Flosculus*, of the natural size; 2, ditto:—*magnified*; 3, hymenium, viewed vertically with the spores on the sporophores; 4, spores:—*highly magnified*.

3. POLYPORUS, *Fries.*

1. POLYPORUS *versicolor*, Fr., *Ep.* p. 473. *Berk. in Ann. Nat. Hist.* vol. iv. p. 292.

HAB. Falkland Islands; on the underside of timber, *C. Darwin, Esq.*

This can scarcely be considered indigenous. The mycelium in all probability existed on the timber when imported.

4. CORTICIUM, *Fries.*

1. CORTICIUM *tremellinum*, Berk.; confluenti-effusum, gelatinosum, pellucidum, candidum, quandoque opacum, subtiliter pruinosum, siccum non rimosum decoloratum.

HAB. Hermite Island, Cape Horn; on bark of the Deciduous Beech in damp woods.

Primum maculas orbiculares exhibens, quæ demum confluendo areolas tenues longe effusas omnes matricis inæqualitates observantes efficiunt; album, ut plurimum pellucidum, quandoque opacum, tenue gelatinosum, subtiliter pruinosum atque exinde nitidulum, inodorum, insipidum; exsiccatum sordide umbrinum. Margo tenuis, nequaquam fimbriatus, hic illic exsiccatione liber. *Sporæ* ellipticæ, majores.

Nearly allied to *Corticium viscosum*, but not in the least cracked when dry. I have found the same species, apparently, in Sherwood Forest, which I had referred to *C. viscosum*; but the characters given by Fries, in his 'Epicrisis,' indicate a distinct species.*

5. TREMELLA, *L.*

1. Tremella *mesenterica*, Retz, *in Vetensk Ac. Handl.* 1769, p. 249. *Engl. Bot.* t. 709.

Hab. Hermite Island, Cape Horn; on a dead trunk of Deciduous Beech, almost covered with former winters' snow, 1,200 feet above the sea, in an exposed place.

The only specimen seen.

6. EXIDIA, *Fries.*

1. Exidia *Auricula Judæ*, Fries, *Ep.* p. 590.

Hab. Port Famine; on Beech, *C. Darwin, Esq.* Hermite Island, Cape Horn; *J. D. H.*

The specimens collected in the latter locality are small and less tomentose than the more usual state of the species.

7. CRUCIBULUM, *Tul.*

1. Crucibulum *vulgare*, Tul. *Ann. Sc. Nat.* Ser. 3. vol. i. p. 90. Cyathus Crucibulum, *Pers. Syn.* p. 238. *Grev. Scot. Crypt. Fl.* t. 34.

Hab. Hermite Island, Cape Horn; on moss near the sea, always solitary.

The specimens differ from the ordinary form, which occurs in the southern as well as in the northern hemisphere, in their solitary habit, more conical peridia, which are of a semi-transparent dirty orange-yellow, and in the more irregular sporangia. In structure I find no difference.

8. LYCOPERDON, *Tourn.*

1. Lycoperdon *calatum*, Bull. *Champ.* vol. i. p. 156. t. 430.

Hab. Falkland Islands; on a tuft of *Bolax*.

One specimen only was met with.

It is not possible to speak very positively of a single old specimen and which had been evidently much exposed to the weather. It is, however, certainly neither *L. gemmatum*, nor *L. pyriforme*, and appears to me to be a state of *L. calatum*. *L. arenarium*, Pers., will be found under the genus *Bulgaria*.

9. LEPTOTHYRIUM, *Kze.*

1. Leptothyrium *decipiens*, Berk.; suborbiculare, atrum, nitidum, sporis tenerrimis irregulari-subfusiformibus quandoque curvatis. (Tab. CLXIII. Fig. III.)

* An authentic specimen, however, received from Mons. Lindblad, since the above was printed, is not more cracked than the Antarctic plant. *Corticium tremellinum* must be considered, therefore, merely a highly developed form of *C. viscosum*.

Hab. Falkland Islands; on dead stems of *Rostkovia grandiflora*.

Puncta irregularia suborbicularia picea nitida in culmos exsiccatos efformans. *Perithecia* valde depressa, demum basi squamæ instar dehiscentia. *Sporæ* irregulares, fusiformes, quandoque curvatæ, tenerrimæ, albæ, pellucidæ; endochromium varie partitum, non autem septatum.

A species which, examined superficially, may be passed over as *Leptostroma junceum*, differing merely in its more shining perithecium. The spores are, however, of a very different form, and many times larger. In that species, as published in 'British Fungi' (No. 197), and by Madame Libert (No. 260), they are extremely minute and obtuse at either extremity; the perithecium also is more closely cellular. In the specimens published by Klotzsch and Fries (in my copy at least), there is no fructification. It resembles also, externally, *Leptostroma vulgare*, but there is as decided a difference as in the former case between the spores.

Plate CLXIII. *Fig.* III.—*Leptothyrium decipiens*, Berk., of the natural size; 2, portion of stem of *Rostkovia grandiflora*, with base of peridium adhering to it:—*magnified*; 3, spores:— highly *magnified*.

10. SPHÆRONEMA, *Fries*.

1. Sphæronema *stictieum*, Berk.; minutissimum, punctiforme, innatum, atrum, nitidum, demum collapsum, sporis minutissimis ellipticis. (Tab. CLXIII. Fig. I.)

Hab. Hermite Island, Cape Horn; on dead leaves of the Deciduous Beech (*Fagus Antarctica*.)

Minutissimum, punctiforme, atrum, nitidum, demum collapsum, præcipue venis foliorum innatum, unde dispositionem reticulatam exhibit. *Sporæ* minutissimæ, sporophoris brevibus filiformibus affixæ.

Not to be confounded with *Sphæria punctiformis*, Pers., (Fr. Sc. Suec. No. 56), which has true asci, assuming the production published by Fries, which exactly accords with specimens gathered in Northamptonshire, to be the type of the species. Both Desmazière's (No. 984), and Mougeot's, and Nestler's (No. 662) plants appear to me quite different. Unfortunately in neither have I been able to detect fructification. In Mougeot's plant the perithecia are strongly collapsed, which is by no means the case with that of Fries; and that of Desmazière approaches *Sp. maculæformis*.

The genus *Sphæronema* is here considered as comprising such species of the genus *Sphæria* as have simple spores, never included in asci, such as *Sp. acuta*, &c.

Plate CLXIII. *Fig.* I.—1, *Sphæronema stictieum*, Berk., upon leaves of *Fagus*, of the natural size; 2, portion of leaf and fungus; 3, spores on their sporophores; 4, spores:—all highly *magnified*.

11. SPORIDESMIUM, *Lk.*

1. Sporidesmium *adscendens*, Berk., *in Ann. Nat. Hist.* vol. iv. p. 292. t. 8. f. 1. 1840.

Hab. Falkland Islands; on the underside of *Polyporus versicolor*, *C. Darwin, Esq.*

The species is nearly allied to *Sp. vagum*, Nees, from which it differs merely in having constantly a single globose nucleus in each articulation, presuming that Corda's figure, published in the same year with that in the Annals of Natural History, is the plant of Nees.

12. ÆCIDIUM, *Gmel.*

1. Æcidium *Magellanicum*, Berk.; hypophyllum, totam faciem inferiorem occupans inque petiolos sparsum, rarissime epiphyllum, maculis rubellis, peridiis urceolatis elongatis, sporis pallidis irregulariter orbicularibus. (Tab. CLXIII. Fig. II.)

Hab. Strait of Magalhaens; Port Famine; on *Berberis ilicifolia*, *Capt. King*.

I.

Asterina pelliculosa Berk.

II.

Asterina Darwinii Berk.

III.

Peziza Kerguelensis Berk.

IV.

Asterina stictica Berk.

Rev.d M.J. Berkeley del.t W. Fitch lith.

Reeve imp.

Maculæ rubellæ; peridia plus minus elongata, urceolata, sursum leviter constricta, vel omnino cylindracea, fragilia, totam superficiem inferiorem investientia, plus minus in petiolos descendentia. *Sporæ* pallidæ (saltem in exemplaribus exsiccatis) irregulariter subglobosæ, angulatæ. Rarissime pauca peridia epiphylla sunt.

Resembling much in external appearance *Æc. sambucinum*, Schwein. It is at once distinguished from *Æcidium Berberidis* by its very different habit.

PLATE CLXIII. *Fig.* II.—1, leaves of *Berberis* and *Æcidium Magellanicum*, of the natural size; 2, portion of leaf and fungus; 3, spores:—*highly magnified.*

13. UREDO, *Pers.*

1. UREDO *candida*, Pers., *Syn.* p. 223.

HAB. Falkland Islands; on *Arabis Macloviana, Capt. Sulivan.*

The mycelium is very visible in these specimens. There is no difference in the spores.

14. MORCHELLA, *Dill.*

1. MORCHELLA *semilibera*, Dec., *Fl. Fr.* vol. ii. p. 212.

HAB. Falkland Islands; on the ground.

I have seen a single imperfect specimen only, which is scarcely more than sufficient to determine the genus. I believe it, however, to be the species of De Candolle, above cited.

15. PEZIZA, *Dill.*

1. PEZIZA *Kerguelensis*, Berk.; media, cupula plana adnata coccinea extus setis brevioribus obsita. (TAB. CLXIV. Fig. III.)

HAB. Hermite Island, Cape Horn; on dead branches amongst the snow, alt. 1,000 feet. Christmas Harbour, Kerguelen's Land; May and June; on bare boggy earth near the sea, growing amongst *Conferveæ.*

Cupula ½–¾ unc. lata, plana, adnata, margine tantum ut plurimum libero, coccinea, externe setis brevioribus subfascidis plus minus contextis primum pallidis deinde saturate rubris vestita, dissepimentis demum absorptis. *Asci* lineares, obtusi; *sporidia* late elliptica, glabra, nucleo unico globoso; *paraphyses* apice clavulatæ.

Allied to *P. scutellata* and *P. umbrosa*, but larger than either. The bristles are short and somewhat flaccid, in which it differs strikingly from the former species, as also in its broader sporidia. From the latter it differs principally in its larger size and less conspicuous hairs. I am not able, in the absence of authentic specimens, to compare the sporidia; but if that species be the same with *P. trechispora*, Berk., and Broome, which is not impossible, the difference is considerable.

PLATE CLXIV. *Fig.* III.—1, Kerguelen's Land, and 2, Cape Horn specimens; of the natural size; 3, setæ:—*magnified*; 4, asci, sporidia and paraphyses; 5, sporidia:—very highly *magnified.*

2. PEZIZA *stercorea*, Pers. *Obs.* vol. ii. p. 89. (TAB. CLXIII. Fig. IV.)

HAB. Port Louis, Falkland Islands; on cow-dung.

Not distinguishable from European specimens. I cannot detect *Ascobolus furfuraceus*, which is so generally its companion in Europe.

PLATE CLXIII. *Fig.* IV.—1, bristles from cup; 2, asci and paraphyses, in the broken ascus the inner membrane is visible, projecting below; 3, sporidia:—all highly *magnified.*

16. BULGARIA, *Fries.*

1. Bulgaria *arenaria*, Lév., *Ann. Sc. Nat.* Scr. 3. vol. v. p. 253. Lycoperdon arenarium, *Pers. in Freyc. Voy.* p. 179. t. 1. f. 2. *Gaud. l. c.*

Hab. Falkland Islands; "très-commun en Mars et Avril, au sommet des dunes de sable qui bordent le contour de la baie Francaise au Camp de l'Uranie."

This species unfortunately was not found during the visit of the Erebus and Terror. M. Léveillé has had an opportunity of inspecting an original specimen, and finds its slender asci to contain simple sporidia.

17. CYTTARIA, *Berk.*

1. Cyttaria *Hookeri*, Berk.; parva, turbinato-obovata, obtuse papillata, pallide fusca, cupulis paucis. (Tab. CLXII. Fig. I.)

Hab. Hermite Island, Cape Horn; on living branches of the Deciduous Beech.

Receptacula communia obovata, e disco oblongo corticali enata, $\frac{3}{4}$–1 unc. alta, $\frac{1}{2}$–$\frac{3}{4}$ unc. crassa, basi *attenuata*, apice obtuse papilliformi, pallide fusca, glabra; contextu ut in aliis speciebus gelatinoso-carnoso, e fibris anastomosantibus; cupulis paucis, primum materie gummosa repletis, demum vacuis; ascis linearibus truncatis, paraphysibus linearibus quandoque furcatis immixtis. *Sporidia* ignota.

The genus *Cyttaria* is peculiar to the Southern hemisphere, and unless Commerson's habitat, to be mentioned presently, should prove correct, to the more temperate latitudes. All the species known at present grow on living beech; *Cyttaria Berteroi* on *Fagus obliqua*, the Fuegian species on *Fagus betuloides*, that of Tasmania on *Fagus Cunninghami*, and *Cyttaria Hookeri* on *Fagus Antarctica*. The species, on which *Cyttaria disciformis*, Lév., grows, has not been ascertained. It is probable that the genus occurs also in New Zealand, where there is a species of beech closely allied to *Fagus Cunninghami*. There exists, indeed, in Monsieur B. Delessert's Herbarium, a species purporting to have been collected in the Isle of Bourbon, by Commerson, but though the locality* is very precisely indicated, it is probable, both on account of the difference of climate and the absence of the genus *Fagus* in that island, that there is some mistake about the specimen.

All the species seem to grow from a distinct disc, which doubtless, as in *Podisoma*, produces a fresh crop every season. The disc bursts through the cuticle, and is formed either entirely of the lower portion of the bark, or of that and the upper stratum of the wood, which are split longitudinally or in the direction of the medullary rays, the fissures being traversed by loose threads of mycelium. Sometimes, also, there are traces of mycelium in portions of bark where no disc has been protruded. The structure of the bark is often much deranged, and sometimes quite disorganized. The base of the receptacles is attenuated, and penetrates generally to the dotted vessels. In *Cyttaria Gunnii*, which seems more truly cortical, there appears always to be a fascicle of such vessels in connexion with the base penetrating through the cortical stratum. I do not find this to be the case in *Cyttaria Hookeri*. The structure of the substance of the receptacles is so different in the plant when dry, from that in the same species when

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* The label attached to the specimen is literally as follows:—

"Elvela Clathrus: sessilis scutellæ instar concava, brunnea subterius murina Commerson. Vel acaulis scutelliformis in concavitate fusca subterius e murino cinerascens. Comm. Entre la Rivière du Rampart et Langevin St. Vincendan, à Bourbon.

Envoié à M. Linné sous le No. 1 (inconnu à M. Linné) An. 1779." (Such appears to be the date, but Commerson died at the Isle of France, in 1773, and the elder Linnæus in 1778.

preserved in spirits, as to be scarcely recognizable. I had, at first, on examining dried specimens of *Cyttaria Gunnii*, fancied that I had made some mistake in the analysis given in my paper in the 19th volume of the Linnean Transactions. The fact is, that when a very thin slice of the dried plant is placed on the field of the microscope, the gelatinous coat of the threads of which it is composed becomes visible; while in the plant preserved in spirits, the jelly seems to form one common mass in which the central tube alone is exhibited, and when the plexus of filaments is drawn out with the point of a lancet, they appear far less curled than they do *in situ*. Perfect sporidia have not at present been observed in any species.*

PLATE CLXII. *Fig.* I.—1, *Cyttaria Hookeri*, Berk., of the natural size, on a living twig of *Fagus Antarctica*; 2, vertical, and 3, transverse sections of a single plant, of the natural size; 4, asci and paraphyses; 5, curious state of asci; 6, part of the tissue from the darker part of a specimen preserved in alcohol; 7, ditto from lighter part artificially extended; 8, portion of intercellular tissue of *Cyttaria Gunnii* as seen in a dry specimen; (the same structure is found in dry specimens of *Cyttaria Hookeri*, and in *Cyttaria Darwinii*, after it has been preserved in alcohol and dried for the Herbarium); 9, horizontal slice from portion of bark nearest to the wood, in a part of a twig not externally attacked by *Cyttaria*, to show the mycelium penetrating the cells; 10, slice of fructifying disc, showing two sorts of tissue of the bark, interrupted by a cavity which is traversed by mycelium; 11, slice of bark infested with mycelium; 12, slice from the outer surface of the wood; 13, section through a fructifying disc, showing fissures radiating from wood through the spongy portion of the bark, which is greatly increased in volume, and also a cavity traversed by mycelium parallel to the cuticle. The lower portion of the fungus penetrates in this case to the wood; occasionally, however, it does not penetrate quite so far:—all the above figures, with the exception of the first two, are more or less *magnified*.

18. ASTERINA, *Lév.*

1. ASTERINA *pelliculosa*, Berk.; effusa, tenuissima, peritheciis punctiformibus depressis atro-fuscis in mycelio fusco a matrice solubili sparsis. (TAB. CLXIV. Fig. I.)

HAB. Chonos Archipelago; on leaves of an *Eugenia*; *C. Darwin, Esq.*

Amphigena, atro-fusca; maculæ irregulares, varie effusæ punctiformesque, e fibrillis radiantibus intertextis ramis patentissimis formatæ, demum e matrice solubiles; interstitiis sæpe strato celluloso tenuissimo repletis.

I have not detected fructification; but the species certainly belongs to the genus *Asterina*, which is very properly separated from *Dothidea* by Léveillé. The cells of which the perithecium is composed are elongated, but very irregular, and I find similar cells often filling up the interstices left by the crossing of the radiating threads. Sometimes the mycelium is very obscure and the species then assumes quite a different appearance, the fructifying cells predominating and the patches presenting merely a brown stain studded with darker specks.

PLATE CLXIV. *Fig.* I.—1, leaves of *Eugenia*, with *Asterina pelliculosa*, Berk., of the natural size; 2, part of perithecium seen from the under side; 3, filaments of mycelium;—highly *magnified*.

2. ASTERINA *stictica*, Berk.; minutissima, omnino punctiformis, mycelio obscuro, peritheciis depressis atro-fuscis margine membranaceo pellucido. (TAB. CLXIV. Fig. IV.)

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* The Tasmanian species, of which I have seen dried specimens only, differs from *Cyttaria Darwinii* in the total absence of the granulations at the base of the receptacle. It may be characterized,—

CYTTARIA *Gunnii*, Berk.; receptaculo subgloboso demum cavo, basi non primum distincte stipitiformi nec scabro, cuputis parvis.

HAB. Tasmania; on *Fagus Cunninghamii*, *R. C. Gunn, Esq.*

The specimens are hollow when dry. I cannot say whether such is also the case in *Cyttaria Darwinii*.

Hab. Hermite Island, Cape Horn; on leaves of *Viola tridentata*.

Amphigena, punctiformis. Mycelium valde obscurum, e filamentis paucis brevibus parce ramosis. *Perithecia* depressa, atro-fusca, e cellulis radiantibus elongatis subregularibus formata; margine tenui lacerato membranaceo pellucido.

Neither have I been able to detect fructification in this plant, but the genus is I believe certain.

Plate CLXIV. Fig. IV.—1, *Viola* attacked with Fungus of the natural size; 2, leaf of ditto and Fungus; 3, perithecium; 4, portion of edge of ditto:—highly *magnified*.

3. Asterina *Darwinii*, Berk.; epiphylla, maculis parvis orbicularibus e fibrillis radiantibus articulatis inarticulatisque, peritheciis irregularibus demum depressis centralibus margine luciniato. (Tab. CLXIV. Fig. II.)

Hab. Cape Tres Montes; on *Azara lanceolata*; *C. Darwin, Esq.*

Maculæ epiphyllæ, orbiculares, ½–1 lin. latæ, e fibrillis radiantibus reticulatisque, partim e margine perithecii, partim e superficie inferiore enatæ, breviter articulatæ, aut omnino simplices. *Perithecia* primum irregularia, subelevata, demum depressa, margine luciniato laciniis denticulatis. *Asci* ut in reliquis speciebus globosi; *sporidia* oblonga, biloculata.

Apparently different from *A. Azaræ*, Lév., in its perithecia, which are not depressed in the centre, as in that species. Unfortunately I have no opportunity of comparing them. The perithecium, both here and in *Asterina microscopica*, splits from the centre in a radiating manner when slightly pressed.

Plate CLXIV. *Fig.* II.—1, *Asterina Darwinii*, Berk., on leaves of *Azara lanceolata*, of the natural size: 2, perithecia and mycelium; *a*, cuticle of matrix; *b*, incipient perithecium; *c*, curious processes given off from threads of mycelium; 3, fibres of mycelium; 4, portion of border of perithecium; 5, processes on threads of mycelium; 6, asci; 7, sporidia:—all very highly *magnified*.

19. EUROTIUM, *Lk.*

1. Eurotium *herbariorum*, Lk., *Obs.* vol. i. p. 29. f. 44.

Hab. On biscuit on board the 'Erebus', Jan. 3rd, 1841.

The sporangia in the specimens before me, which are very scanty, are almost destitute of flocci, but accompanied by an abundant tawny mycelium, thus confirming the opinion of Fries and Corda, that *Eurotium epiphylon* is not really a distinct species. I cannot, however, think with Corda that it has the slightest affinity with *Physarum*. The morphosis has not at present been traced, and till this is done it appears better to let it remain where Fries has placed it, in the neighbourhood of *Mucor*.

The peridium is lined with a stratum of gelatinous cells, which vanish in a great measure as the plant approaches maturity. The flocci in Kze. and Schm., n. 83, are rough and dark, but I find great variation both of surface and colour.

LV. ALGÆ, *L.*

1. D'URVILLÆA, *Bory.*

1. D'Urvillæa *utilis*, Bory, *in Duperrey Voy. Bot.* p. 65. t. 1 et 2. f. 2. *Fl. Antarct.* Pt. 1. p. 167. Laminaria cæpæstipes, *Montagne in Voy. D'Orbigny, Bot. Crypt.* p. 11. t. 2.

Hab. Tierra del Fuego, the Falkland Islands, and Kerguelen's Land; very abundant at half-tide mark and below it; also in the open ocean, between lat. 45° and 55° S., reaching the 65th degree of south latitude in the meridian of New Zealand.

This, the *Lessonia*, and *Macrocystis* are the three most remarkable *Algæ* of the Antarctic regions, especially on account of their size; the present exceeding any sea-weed, except the *Lessonia* and the *Ecklonia buccinalis* of the Cape of Good Hope, in bulk; while the *Macrocystis*, to which we shall afterwards allude, is the longest vegetable production known.

The nearest affinity of *D'Urvillæa* was considered, in the 'London Journal of Botany' (vol. ii. p. 325), to be with *Himanthalia* of the Northern and Arctic seas, an opinion to which one of us was led by observing how, in habit and locality, these species represented each other in the opposite Polar oceans. Wahlenberg, Bory de St. Vincent and Greville, all regard the curious pezizæform organ of *Himanthalia* as the frond, and the deciduous strap-shaped lacinie as receptacles, which view is also maintained in the 'Phycologia Britannica' (t. lxxviii.) Lyngbye (the founder of the species) and Agardh, on the other hand, pronounce the frond to be swollen at the base into a bladdery stipes, furnished with strap-shaped lacinie, over whose surface the conceptacles are scattered as in *D'Urvillæa*; and in *Xiphophora*, a genus (as pointed out by Montagne) nearly allied to the present, and which represents it in a lower latitude of the Southern Ocean. In the 'London Journal of Botany' the true analogy to the bladder of *Himanthalia* was sought in the *trumpet-shaped* stipes of *Ecklonia buccinalis*, but in that plant the growth of stipes and frond proceeds from the earliest stage, *pari-passu*, whilst the bladder of *Himanthalia* is fully developed before the straps appear.

We have nowhere seen a good representation of the beautiful cellular tissue of *D'Urvillæa utilis*, which, in its fresh state, is so regular and large as to resemble perfectly in size and structure one of the two layers of cells found in honey-comb. Most of the specimens brought to Europe are injured by pressure, which can however hardly have caused the total obliteration of structure which M. Bory's plate represents; the most accurate figure we know is given in the beautiful plate accompanying M. Decaisne's 'Essay on the fructification of Algæ'.

The spores of this and the following species are divided into four, and we cannot doubt but that this division is followed by the complete breaking up of the organ into four sporules, whose future germination resembles that described by MM. Decaisne and Thuret in *Fucus serratus* ('Annales des Sc. Nat.' Ser. 3. vol. iii. p. 10. t. 2). The conceptacles contain probably both antheridia and spores, so far as we can judge from drawings taken from the living plant, though at the time these bodies were not recognized as belonging to two different classes of organs.

The northern limit of *D'Urvillæa* will probably be found to be the latitude of Valparaiso, or 33° S., on the West coast of South America, and 50° S., on the opposite shores of the same continent. In New Zealand it attains the parallel of 40°, but whether it inhabits any of the shores of Tasmania, or is there represented by the *Fucus potatorum*, is a question we cannot answer. Though carried by the currents along the ocean also to the south of the Cape of Good Hope, (for it was collected in that meridian in the 51st degree, floating in the open ocean,) it does not appear to inhabit or be cast upon the southern extremity of Africa; and in the Indian Ocean, again, its range is not likely to be north of the Islets of Prince Edward's, the Crozet group and Kerguelen's Land. On the other hand, the south latitude it attains is probably regulated by the position of the Pack Ice, to within a few miles of which it was traced by the Antarctic Expedition, on one occasion, south of New Zealand to the 65th degree, which is probably its "ultima Thule" in any longitude; for it was there the last trace of vegetation. It grows invariably accompanied by the *Macrocystis pyrifera*.

Bory de St. Vincent states, on the excellent authority of D'Urville, that the poorer classes of West Chili use this plant for food, and that when made into soup it is very palateable, being sweet and mucilaginous. In Kerguelen's Land its enormous and weighty fronds, sometimes ten feet long, and almost too heavy for a man to lift, form the only shelter for the shells and soft animals, which there find a refuge from the flocks of aquatic birds that cover the shores and follow the receding tide.

2. D'Urvillæa *Harveyi*, Hook. fil.; radice e fibris crassis demum anastomosantibus constante, stipite perbrevi valido compresso in laminam subsolidam coriaceam apice lacinintam grudatim dilatato. Nobis in *Lond. Journ. Bot.* vol. iv. p. 249. · Himanthalia D'Urvillæi, *Bory? in Duperrey Voy. Bot.* p. 135. (Tab. CLXV, CLXVI.)

Hab. Hermite Island, Cape Horn, and the Falkland Islands; abundant.

Radix fibrosus, fibris crassis, inter se intricatis, demum anastomosantibus, discum callumve pertusum 2–4 unc. diametro efficientibus. *Stipes* 3–4-uncialis, $\frac{1}{4}$–$\frac{3}{4}$ unc. diametro, valde compressus, in laminam forma variam gradatim dilatatus. *Lamina* 4–8-pedalis, supra medium 1–2 ped. lata, plerumque late lanceolata, basi angustata, apicem versus in lacinias plures lineari-elongatas ligulatas abbreviatasve acutas truncatasve fissa, siccitate atro-fusca v. subpicea, opaca, dure, subfragilis, lineis superficialibus striata, v. subreticulata, e conceptaculis prominulis mamillosa; raudore olivaceo-brunnea, coriacea v. flaccida, plana, lævis, intus solida, 1–4 lin. crassa. *Conceptacula* spherica, per totam frondem sparsa, poro inconspicuo pertusa, filis articulatis sporisque basifixis repleta. *Sporæ* ut in *D.utilis*, varie quaternatim divisæ, limbo hyalino cinctæ.

Always considerably smaller than the *D. utilis*, of a much thinner texture, and readily distinguishable by its fibrous root. I have never observed the frond of even the largest state of this species to be filled with those elongated transverse cells which distinguish the former.

The structure of the fronds is seen to consist, on a transverse section, of a dense narrow layer of cortical substance, which gradually becomes more open inwards, and there breaks up into parallel lamellæ projecting towards the centre of the frond. These are less densely packed inwards, and are united at right angles by similar very short plates, together forming a loose cellular tissue, whose walls are thickened at the angles; which, again, at the very centre of the frond, are gradually resolved into a mass of slender, short, waved filaments, free or anastomosing and floating in a gelatine.

The affinity of the *Laminaria potatorum* is probably with this genus; it is described, by M. Kützing, under the generic name of *Sarcophycus* (Phycologia, p. 392). I have examined a very small fragment of the plant, and find the spores to be contained in cysts, altogether like those of *D' Urvillæa* and *Xiphophora*.

Plates CLXV, CLXVI.—1, transverse slice of frond; 2, vertical section of ditto; 3, spores and antheridia; 4, spores:—highly *magnified*.

2. SCYTOTHALIA, *Grev.*

1. Scytothalia *Jacquinotii*, Mont., *in Voy. au Pole Sud, Bot. Crypt.* p. 86. t. 5.

Hab. Graham's Land; lat. 68° S., floating in the ocean, *Dr. Lyall*. Deception Island, New South Shetlands; *Mr. Webster*.

An accurate description of this noble sea-weed is given by its discoverer, Mr. Webster, R.N., in the Appendix to the Narrative of Capt. Foster's Voyage; though nothing was known of the species, botanically, until specimens were received by Dr. Montagne, from the Herbarium of the French South Polar Expedition, collected within a very few miles of the spot where it was again seen by the Antarctic Expedition, and obtained by our indefatigable friend, Dr. Lyall.

The existence of this sea-weed on the Icy shores of an Antarctic land, in the longitude of Cape Horn, is a most singular and anomalous fact; for I believe it to be the only species of the tribe *Cystoseireæ*, which inhabits the colder or Antarctic seas of South America; though many abound in similar temperate latitudes of New Zealand, Lord Auckland's group, New Holland, and Tasmania. We have thus, under the most rigorous skies, the representative of a group, the total absence of whose other species in warmer seas of the same longitude, was supposed to be owing to a low degree of temperature being destructive to its life. The said group of *Cystoseireæ* is not here represented by a species in any way indicative of its habitat being far removed from its congeners, or of its locality being uncongenial,

C. Lessonia ovata
D. ___ fuscescens

A & B. Macrocystis luxurians

except by one of its own aspect; for its nearest and, indeed, very near ally, is a native of New Holland; whilst in size, luxuriance and beauty of growth, the present surpasses not only all other species of the genus, but almost the whole of the group *Cystoseireæ*.

We are accustomed to regard the ocean as so ever-active and powerful an agent in facilitating migration, and its uniform temperature is so conducive to the general diffusion of species, that it seems almost wonderful that *Algæ* should have limits to their distribution, especially in waters which gird the globe on the same parallel of latitude, and whose unchecked swells and currents literally extend over every degree of longitude. The remarkable increase in temperature of the tropical over the polar seas of the Atlantic may, and probably alone does, check the progress of the *Macrocystis* in its course from Cape Horn to the Equator in that ocean, for, as I shall afterwards show, the same sea-weed can float with the colder currents of the Pacific from the same Cape to Behring's Straits; but no such obstacle prevents the fullest interchange of *Cystoseireæ* between New Zealand and the temperate seas of South America. It, however, is the fact, that whilst this group literally abounds in certain latitudes and longitudes, which are those of New Holland and the West Pacific, they are nearly absent from analogous positions in the longitude of South America.

Throughout all latitudes the two tribes *Fucoideæ* and *Cystoseireæ* form that prevailing marine vegetation to which the name *sea-weed* is commonly applied; and the different genera so far arrange themselves within geographical limits as to present, with such few exceptions as the *Scytothalia Jacquinotii*, a most harmonious assemblage. Thus, in the opposite colder and frigid zones the waters are inhabited by certain genera of *Fucoideæ* which are in a great measure representatives of one another; as, in

the north cool zone { *Fucus* proper, and *Himanthalia*, } are represented in analogous southern zones, by { *D'Urvillea*, and *Sarcophycus*, Kütz.

None of these genera approach the tropics, for the *Fucoideæ* abound towards the poles, and there attain their greatest bulk, diminishing rapidly towards the Equator, and ceasing some degrees from the Line itself. The representatives of the *Cystoseireæ* in the higher latitudes of the opposite hemisphere, are equally appropriate with those of *Fucoideæ*, for we have in

the north cool zone { *Cystoseira*, and *Halidrys*, } represented in the south cool zone, by { *Blossevillea*, and *Scytothalia*;

whilst the immense genus *Sargassum* finds its maximum in lower latitudes, and under the Equator itself.

Such are the salient features of the distribution of these tribes, which are not influenced by the minor divisions, chiefly local assemblages of small genera, affecting exclusively certain coasts or bays.

3. LESSONIA, *Bory*.

1. Lessonia *fuscescens*, Bory, *in Duperrey Voy. Bot. Crypt.* p. 75. t. 2. f. 2. et t. 3. *Post. et Ruppr. Illust. Alg.* p. 2. t. 3 et p. 4. t. 39. f. 14–18. L. flavicans, *D'Urville, in Mém. Soc. Linn. Paris*, vol. iv. p. 594. (Tab. CLXVII., CLXVIII. *A.*, and Tab. CLXXI. *D.*)

Hab. Hermite Island, Cape Horn, and Falkland Islands; most abundant, always far beyond low-water mark. Christmas Harbour, Kerguelen's Land; rare

The fructification of the species of *Lessonia* occurs, as in *Macrocystis*, upon the surface of the fronds, and there forms large patches. In the present species the sori are situated beyond the middle of the leaf, they are oblong and nearly as broad as the lamina, of which they carry away the upper part when decaying, causing their broad apices to be two-horned. In none of our specimens is the point perfect, all the spores we have seen being situated on the edges of the sorus, which has itself fallen away from the frond. The air-cells are less numerous, and the spores are smaller, shorter, more densely packed than in the following species, and covered

with a very thin cuticular layer of the frond. The presence of this cuticle is owing to the peculiar manner in which the superficial or sporiferous cells of the frond dehisce transversely, allowing the dispersion of the spores (shown in the dissection of *Macrocystis*, given at PLATE CLXIX., CLXX. *Fig.* 2).

This and the following are truly wonderful *Algæ*, whether seen in the water or on the beach; for they are arborescent, dichotomously branched trees, with the branches pendulous and again divided into sprays, from which hang linear leaves 1–3 feet long. The trunks usually are about 5–10 feet long, as thick as the human thigh, rather contracted at the very base, and again diminishing upwards. The individual plants are attached in groups or solitary, but gregarious, like the pine or oak, extending over a considerable surface, so as to form a miniature forest, which is entirely submerged during high-water or even half-tide, but whose topmost branches project above the surface at the ebb. To sail in a boat over these groves on a calm day affords the naturalist a delightful recreation; for he may there witness, in the Antarctic regions, and below the surface of the ocean, as busy a scene as is presented by the coral reefs of the tropics. The leaves of the *Lessonia* are crowded with *Sertularie* and *Mollusca*, or encrusted with *Flustræ*; on the trunks parasitic *Algæ* abound, together with *Chitons*, *Patellæ*, and other shells; at the bases, and amongst the tangled roots swarm thousands of *Crustacea* and *Radiata*, whilst fish of several species dart amongst the leaves and branches. But it is on the sunken rocks of the outer coasts that this genus chiefly prevails, and from thence thousands of these trees are flung ashore by the waves, and with the *Macrocystis*, and *D'Urvillæa*, form along the beach continued masses of vegetable rejectamenta, miles in extent, some yards broad, and three feet in depth; the upper edge of this belt of putrefying matter is well in-shore, whilst the outer or seaward edge dips into the water, and receives the accumulating wreck from the sub-marine forests throughout its whole length. Amongst these masses the best *Algæ* of the Falklands are found, though if the weather be mild, the stench, which resembles putrid cabbage, is so strong as to be almost insufferable. The ignorant observer at once takes the trunks of *Lessonia* thus washed up for pieces of drift-wood, and on one occasion, no persuasion could prevent the captain of a brig from employing his boat and boat's crew, during two bitterly cold days, in collecting this incombustible weed for fuel!

The trunks, which contract to one-fourth of their original dimensions when dry, and become deeply furrowed, are perfectly smooth and cartilaginous when fresh. On being cut across, the curious appearance of concentric elliptical rings, in many respects similar to, though very different from, those of an Exogenous trunk, is very evident. These rings surround a lance-shaped pale line, which occupies the broad axis of the compressed stem, without reaching across it, and appears to afford some rude indication of the age of the plant, though of this we could by no means satisfy ourselves. It is singular that this, the most arborescent of the *Algæ*, and the beautiful *Venea melaxantha*, the most tree-like in form of the *Lichens*, are nearly the only plants of the Orders to which they respectively belong, conspicuously presenting even a semblance, if it be no more, to a growth that indicates an increase by periodical accessions to the circumference.

The substance of the trunk of the *Lessonia* is very usefully employed by the Gauchoes, for knife-handles*; the haft of the instrument is plunged into a rudely-shaped piece of this weed, which contracts into a substance harder than horn. The range of the present species is from the Falkland Islands to Cape Horn, and thence north along the coasts of South America, probably to Valparaiso.

PLATE CLXVII.—CLXVIII. *A.*—apex of a branch and fronds, of the natural size; *A.* 2, portion of stem showing layers of cellular tissue and air-cell:—*magnified*.

2. LESSONIA *nigrescens*, Bory, *in Duperrey Voy. Bot. Crypt.* p. 80. t. 5. *Post. et Ruppr. Illust. Alg.* pp. 2 et 4. t. 4 et 39. f. 11 et 18. (TAB. CLXVII.—CLXVIII. *C.*)

HAB. Hermite Island, Cape Horn, and the Falkland Islands; very abundant, with the former species.

A species very similar to the preceding in general appearance, but of a different consistence and colour.

* The stipes of *Laminaria digitata* is used by the Orkneymen for similar purposes, as is noticed by our excellent friend Dr. Neill, in his interesting account of the Orkney Islands.

Fructification forming a large oblong or linear sorus between the base and middle of the frond, of a rich red-brown colour when held between the eye and light, imbedded in the thickened substance of the frond, which decays with it. On a transverse section the sori ferous lamina is seen to be hollow in the centre; or rather the sorus is formed of two parallel plates, each covered externally with densely aggregated spores, which occupy what are the superficial cells of other parts of the frond. Below the superficial series of cells, and especially in fertile specimens beneath the spores, are several, 4–6 or many more, air-cavities, reposing on, and separated from each other by a loose cellular tissue, which is hexagonal, transparent, the cells becoming transversely elongated and finally towards the centre of the frond breaking up into a layer of matted filaments, which surrounds the cavity, a structure resembling very closely that of *Fucus confluens* as given by Turner. When dry, the surface of the plant is covered with white efflorescence, similar to that of *Laminaria saccharina*, it has been analysed by my friend Mr. Stenhouse of Glasgow, who finds it to contain excellent Manna, and who further informs me that this and the other larger Antarctic *Algæ* are peculiarly rich in Iodine.

The *Lessonia quercifolia* of Bory, is described and figured as having the frond covered with cavities containing spores, whence it would appear to belong to *Fucoideæ*, and to be more allied to *D'Urvillea* than to this genus.

Lessonia ciliata of Postel and Rupprecht, is certainly only the young state of *Macrocystis pyrifera*.

PLATE CLXVII.—CLXVIII.—*C.* transverse section of frond in fructification:—highly *magnified*.

3. LESSONIA *ovata*, Hook. fil. et Harv.; stipite brevi vage dichotome ramoso, ramis brevibus divaricatis, frondis laciniis breviter petiolatis, petiolo in laminam ovatam lineari-ovatamve olivaceo-fuscescentem submembranaceam dilatato. (TAB. CLXVII.—CLXVIII. *B*; et TAB. CLXXI. *C*.)

HAB. Hermite Island, Cape Horn, and the Falkland Islands; very abundant.

Radix e fibris perplurimis crassis intricatis massam 1–2 ped. latam efficientibus. *Stipites* e radice plurimi (ut in *Macrocysti*) 4–6 unc. longi, torti v. flexuosi, crassitie pollicis humanæ, dichotome fissi, demum solitarii, incrassati, subarborescentes. *Laminæ* pedales, colore et substantia *L. fuscescentis*, juniores basi obscure sinuato-dentatæ; adultæ integerrimæ.

Certainly very near *L. fuscescens*; but as far as could be judged on examining the plant, both on the shores it inhabits and in the herbarium, it has good claims to be considered a distinct species, especially in the many short stipites, short branches and broad leaves. Never having seen the fruit, however, it may prove the young of *L. fuscescens*, for we can well suppose only one out of the many stems of that plant to attain any great dimensions, and the lamina of the young state to be broader than that of the adult.

The ramification of all the species of *Lessonia* is dichotomous; each plant in a young state consists of a few rooting and clasping fibres, giving off a single stem (or petiole) and frond. This frond splits at the base, and as the growth proceeds, the fissure extends vertically upwards, till the original frond is bisected; each of the two parts is now a complete frond, altogether similar to the primary one, and provided with a petiole of its own: these again divide, and the process is repeated. Hence the rapid growth of this genus, and hence the origin of the flattened form of ramuli and elliptic core which is placed in the long axis of these ramuli and across the axis of the terete stem. It was not observed whether any relation existed between the number of branches on the whole frond and of concentric rings in the trunk. The latter are probably the indices of the number of times that a subdivision of the laminæ has occurred, supposing that all split at about the same epoch, rather than a register of the years the vegetable has existed; as the following account of the anatomy of this species will show.

A branched portion of the plant, terminated by four laminæ, necessarily presents subdivisions of three periods of growth: 1st, the petioles of the four laminæ; 2nd, the two ramuli from which the four are given off; and 3rd, the one branch which gives off the two latter: these were successively examined.

1. The base of the lamina or petiole is exceedingly compressed, and composed of a mass of cellular tissue of

different textures, all, however, very gelatinous, and modifications of the three layers forming the leaf, there are 1st, the superficial tissue (or cortex) consisting of small cells, closely packed and full of chromule, gradually opening out into, 2nd, an intermediate tissue of much larger cells more loosely placed, with little or no contained chromule, separated by much gelatine; and 3rd, an elliptical core placed in the long axis of the petiole, composed of still smaller cells, separated by broader masses of gelatine, which latter is permeated by canals, full, as are the small cells, of chromule.

2. Each ramulus, from which proceed the two petioles, whose structure we have just described, presents no very important difference from them; the core no longer stretches across it, however, but the whole petiole within the superficial portion is augmented by a newly developed though indistinct zone of cellular tissue, thus deposited between the superficial (or cortical) and intermediate tissue. At this period the cortex is somewhat broader, and the intermediate tissue has become, through the absorption of the gelatine, much more conspicuous; the cells being larger and the spaces between them narrower; little or no change is perceptible in the core itself.

3. The branch is very materially different from either of the above, for what was hitherto the petiole is now enclosed (all but its cortex) in a very broad zone of cellular tissue, whose cells are large and thin towards the old tissue, elongated and of a different shape, so as to show the line of separation between the two periods of growth (see *B* 1, of the plate *Lessonia*).

From this time forward the normal mode of growth followed by the stem exhibits an additional layer or zone of cellular tissue for every subdivison of the frond, (shown at *A* 1, where six are interposed between the cortex and core). It is not probable, however, that this numerical relation can be always evident, or that the number of subdivisions of the frond will indicate the rings of growth in a large stem. This uncertainty arises from the branches being frequently broken off; added to which, the growth of the sea-weed is very rapid, and there being no period of rest, irregular zones may be expected, or their absence from those branches of the plant whose leaves are injured.

In their anatomy the stems of *L. fuscescens* and *L. nigrescens* do not differ much from that of this species, except that the air-cells are copious in the stems of the former, and much rarer in the latter; in which also the cortical substance is much broader.

In the elegant *Lessonia Sinclairi*, Harv. MSS., from California, the stipes (which bears but a solitary linear frond) is terete, and in the specimen we examined, contains a central core, reaching half-way across the diameter. There are apparently two rings of tissue beneath the cortex, separated by a zone of very large cells (air-cells?); whence it is difficult to account for the stem being terete, for the frond is plane, and the core three times longer than broad. Nor is it easy to explain the origin of the two zones surrounding the core; if they really be successively deposited, it is possible that the frond is two years old; if not, that the large cells are air-cells, and do not indicate a line of separation between two successive deposits.

I have stated the growth of the *Lessonia* to be very rapid; this is proved by the zones of a five-ringed stem being progressively broader towards the circumference. The probability, too, of one being added for every time the laminæ divide, and the fact that the process of subdivision is continued in geometrical progression, all favour the opinion that these *Algæ* attain their enormous bulk in a very few months. The vast masses washed up on the outer eastern shores of the East Falkland Island, and the rapidity with which they decay, are additional proofs of a singularly rapid development.

The analogy between the mode of growth exhibited by this genus and an Exogenous tree, is, though incomplete, very obvious; both increase by layers deposited outside one another, within a cortical substance, and both contain an axis of tissue different from that forming the greater part of the trunk: here, however, there are no traces of medullary rays. We conclude this subject with the observation, that the periodical increment of the trunk being dependent on, or coincident with, the formation of the laminæ, these appear to perform the office of the leaves in the higher order of plants; and that the *Lessonia* is also in this respect analogous to an Exogenous plant,

deprived of its woody tissue, for it is a stem composed of layer upon layer of cellular tissue, deposited round an axis, which, like the pith, when once formed, is afterwards but slightly modified.

PLATE CLXVII.—CLXVIII. *B.* apex of branch and frond of the natural size; *B* 1, transverse section of young stem:—*magnified*.

4. MACROCYSTIS, *Ag.*

1. MACROCYSTIS *pyrifera*, Agardh, *Sp. Alg.* vol. i. p. 47. *Nov. Act. Nat. Cur.* vol. xix. p. 297. t. 26 f. 2. *Post. et Ruppr. Illust. Alg.* p. 9. t. 6; et p. 4. t. 39. f. 22, 23. *Fl. Antarct.* Pt. 1. p. 178. M. communis, *Bory, in Dict. Class.* v. x. p. 8. M. planicaulis, *Agardh in Nov. Act. Nat. Cur. l. c.* Lessonia ciliata, *Post. et Ruppr. l. c.* (young state).

Var. β. *integrifrons*; foliis fere integerrimis planis rugoso-plicatisve. M. integrifrons, *Bory, l. c.* t. 6.

Var. γ. *angustifrons*; vesicularum parietibus tenuibus, foliis ut in *M. pyrifera*. M. angustifrons, *Bory, l. c.* t. 8. *Agardh, l. c.* t. 26. f. 4 and 5. *Post. et Ruppr.* t. 5.

Var. δ. *zosteræfolia*; foliis anguste lineari-elongatis planis. M. zosteræfolia, *Bory, &c.*

Var. ε. *luxurians*; foliis 3–8-pedalibus 8 unc. latis basi cordatis membranaceis plicatis margine longe ciliato-dentatis, vesiculis late obovatis parietibus tenuibus, caule gracili. (TAB. CLXIX.—CLXX.)

Var. ζ. *membranacea*; foliis ut in *M. pyrifera* sed tenuissime membranaceis planis, vesiculis parvis elliptico-ovatis utrinque subacutis.

Var. η. *Humboldtii*; foliis lineari-elongatis planiusculis, vesiculis globosis tenuibus. M. Humboldtii, *auct.* M. pomifera, *Bory*.

HAB. Throughout the Antarctic seas, between the parallels of 40° and 64°, both attached, and floating over the whole ocean.

After a very attentive examination of many hundreds of specimens, we have arrived at the conclusion that all the described species of this genus which have come under our notice may safely be referred to *Macrocystis pyrifera*. Nor can these variations excite surprize, when it is considered that this gigantic weed is subject to every vicissitude of climate, of temperature, and exposure; that it literally ranges from the Antarctic to the Arctic circle, through 120 degrees of latitude; that it lives and flourishes, whether floating or attached, growing in bays, harbours, or the open sea when most distant from land; and, lastly, that it equally adapts itself to the calmest or most tempestuous situations, to waters of uniform depths or those which rise and sink with the tide, to dead water or to strong currents. One thing alone it requires, and that is, a mean depth of six or more fathoms; for, like the *Laminariæ* of our own shores, it, and others of the same tribe in the south, invariably form the outer belt of marine vegetation.

A few remarks upon the above varietics may be interesting; showing how much their characters depend upon natural causes, and how much more upon mutilations of the specimens, or changes during the operation of drying.

Variety β. *integrifrons*. This we have received from various parts of the west coast of South America; its characters rest almost entirely on the want of ciliation at the margin of the frond, which is much dependent upon the portion of the plant from which the specimen is taken, the lower leaves being always nearly entire; also on the state of the waters, those plants which grow in quiet bays having very much developed cilize, whilst those from the main ocean or stormy coasts are generally more entire.

Variety δ. *zosterafolia*, is a plane and narrow-leaved state of *M. pyrifera*; we have traced all the changes in one specimen of *M. pyrifera*, from very rugose to perfectly plane. Young specimens and terminal leaves are generally

plane, and it often depends on the smoothness of the water how long they may remain so. This variety is abundant everywhere in the Antarctic seas.

Variety γ. *angustifrons*. The character, drawn from the tenuity of the vesicles, is utterly unsatisfactory, being attributable to the drying of the specimen, and the locality of the live plant. Besides the Antarctic habitats of this variety, it has been found in Chili, New Zealand, and the Indian Ocean.

Varieties ε. *luxurians*, and ζ. *membranacea*. If any form of this genus deserves specific distinction it is surely the noble one we have designated ε. *luxurians*; and yet permanent characters, distinguishing it from *pyrifera*, were vainly sought in plants gathered on the shores of Berkeley Sound. Both there and at Cape Horn these two states inhabited deep and still waters, where, as might be expected, the *Macrocystis* would acquire its greatest development, where its substance would be most membranous, its stems most slender, and the vesicles broad with thin walls, and the base of the frond broadest. We have seen no specimens of these varieties except what were brought home by the Antarctic Expedition.

Variety η. *Humboldtii*, at first sight appears different, and the specimens found on the outer shores of the Falklands we once thought might belong to a distinct species. The rounded form of the vesicles, however, which affords the main character, is not constant on specimens collected in the Coral Islands by Captain Beechey. It has been gathered at various places along the west coast of South America, from Cape Horn to the Equator, and far westward in the Pacific amongst the Coral Islands.

With regard to other states, which we have not seen, the most remarkable is the *M. Orbignyana* of Montagne (Sert. Patagon. p. 12. t. 1.), which has the vesicles remarkably lengthened and the leaf attenuated at the base above the vesicle into a distinct petiole. The *M. latifolia*, Bory, is intermediate between our ε. *luxurians* and *pyrifera*. *M. tenuifolia*, Post. and Ruppr., is apparently between *M. pyrifera* and *M. zostercefolia*. The character of *M. planicaulis* is founded on the compression of the stem, produced by drying, and we have therefore quoted it as a synonym.

In thus bringing together under one, the ten species which have been described by five authors, of whom hardly one has ever seen even the genus in a living state, we are only taking advantage of opportunities which a long residence in the Southern Hemisphere has afforded. Without studying these plants on the coasts they inhabit, it is impossible to judge of the influence of local causes on their plastic forms. We venture to say that few botanists in Europe have seen even tolerable specimens from one single plant of this *Alga*, such, we mean, as give a fair idea of the differences between the leaves and bladders, along, perhaps, 300 feet of stem, with the submerged fructifying fronds from the root. Out of some thirty specimens brought home by ten different collectors and preserved in the Hookerian Herbarium previous to our visit to the seas which *M. pyrifera* inhabits, not one conveys any notion of the variations which even a solitary individual can assume.

The fructification of this plant appears to be produced only on the young newly-formed submerged leaves, where it forms large irregular brown patches or sori, causing the frond to separate into two laminæ, as in *Lessonia*. The spores are fusiform, first divided into four, each afterwards breaking up into as many sporidia. Under a high power the surface of the fertile frond is seen generally to be covered with anastomosing raised lines of a dark colour, on which the spores are placed; the spaces between are pale and transparent. We have not noticed spores, like what are figured by Agardh (l. c. t. 28. f. 21), but plenty of the kind he represents at f. 10^2 of the same plate, though not contained in sporangia. These, magnified as highly as his f. 10^3, are evidently divided, as in *D'Urvillæa*. The granules also, which occur abundantly with the spores, are surrounded by a hyaline border, and divided into two to four sporidia; we suppose them to be merely small spores.

It is seldom that the history of an *Alga* is likely to afford interest or amusement to the general reader, unless it be a positively valuable plant in an economic point of view. Like the Sargasso-weed of the Tropics, however, the *Macrocystis* is so conspicuous, and from its wandering habits, often occurs so unexpectedly, that the attention of our earliest voyagers has been directed to it, and we are consequently led back by our enquiries into its first

discovery, to the annals of those perils and privations which have ever marked the progress of discovery or enterprize in the stormy seas of the south. "Nihil vilior Alga", is a saying more trite than true, and one which a seaman can never use; for these weeds often prove his unerring guide towards land, as they surely are to the direction of the currents; or become of more importance still in the case of the present plant; for it is, where growing, not only the infallible sign of sunken rocks, but every rock that can prove dangerous to a ship is conspicuously buoyed by its slender stem and green fronds, and we may safely affirm that without its presence many channels would be impracticable, and numerous harbours in the south closed to our adventurous mariners.

The first notice of the *Macrocystis*, with which we are acquainted, is of so early a date as the middle of the 16th century, and occurs in a copy of sailing directions for mariners, with the title "A Ruttier from the River of Plate to the Streight of Magelana", and forms part of "A special note concerning the currents of the sea between the Cape of Buena Esperanza and the coast of Brazilia, given by a French pilot before Sir John Yorke, Knt., before Sebastian Cabote, which pilot had frequented the shores of Brazilia eighteen voyages." (Hakluyt, ed. 2. vol. iv. p. 219). In describing the above-mentioned route, after passing Cape Sta. Martha, the trusty pilot's direction to the mariner is to "goe S.W. by W. until he be in 40 degrees, where he shall find great store of weedes which come from the coast"; and again, in pursuing the voyage after entering the Straits, "if you see beds of weede, take heed of them and keep off from them." Now, both the position assigned to the great masses of floating weed and the value of those which are attached in denoting hidden dangers, are conclusive as applying to the *Macrocystis*. These directions bear no date; but the discovery of the Strait of Magalhaens was in 1520, and the death of Sebastian Cabote took place in 1556, so that we have sufficient proof that this plant attracted the attention of the earliest Antarctic voyagers in the longitudes of Cape Horn; though it may have been noticed previously on the southern extreme of Africa or the China seas. Nor can we wonder that the attention of our forefathers should have been so early called to it, when even now it is of the first importance that the look-out man should use his utmost vigilance to detect, and promptitude to report, this weed, on approaching any of the straits and bays of the shores of Tierra del Fuego and similar latitudes. In the latest voyages that have been published, those of Capts. Foster, King, and Fitz-Roy, we find a constant watch for the "kelp" to have been kept, and caution used to avoid the "moored" pieces, together with instructions how to distinguish them from those which are floating.

The earliest scientific notice which we find of it, consists of a rude figure and description in Bauhin's "Historia Plantarum," published in 1651, where it is designated "Fucus marinus crinitus." In the year 1764, the French Navigator, Bougainville, fell in with the *Macrocystis*, Lat. 48° S., Long. 57° W., and a long description appeared in 1771, by Don Pernetty, the historiographer of that voyage, together with a sketch, when it was published as a native also of the Falkland Islands. (Pernetty Voy., vol. ii. p. 67. t. ix. f. 5.) About the same period (1771) specimens were collected by Emmanuel Kœnig (of Bale) on his voyage to India, and transmitted to Linnæus, with this observation, "Habitat in oceano Æthiopico e profundissimo mari sæpe enatans insulasque quasi formans," (MSS.); it was then published in 1771, as *Fucus pyriferus* (Linn. Mantiss. p. 311,) with the additional remark of "maximus forte omnium Fucorum." We are not sure of the precise habitat of Kœnig's specimens; but by "oceanus Æthiopicus" he probably alluded to the seas of the Cape of Good Hope, which he doubled on his way to India, and where this weed abounds.

So remarkable a plant was not likely to escape the notice of Cook, and especially of the illustrious companion of that navigator's first voyage, and we accordingly find in his narrative repeated allusions to it. It engaged the attention of Banks when entering the Straits of Le Maire in 1769, and frequently afterwards in the cooler latitudes of the southern ocean. To him we owe the first account of its gigantic dimensions. Captain Cook says, on the authority of Banks and Solander, who called it *Fucus giganteus*, that the stems attain a length of 120 feet. That these dimensions are considerably under the mark there is little doubt; though the report that specimens have been measured upwards of 1000 feet is perhaps as much of an exaggeration. Still it must be remembered that, provided the water be smooth and of sufficient extent, there are no impediments to the almost indefinite

elongation of the upper part of a plant which never branches, and whose growth is independent of all below it, even of the root. Specimens measuring between 100 and 200 feet are common in the open ocean, and these are always broken off at the lower end, either from the division of the frond by sea-animals, through whose agency the plant increases and the floating island it forms dilates, or from the impossibility of securing the whole mass from the motion of the vessel or the swell of the sea, in latitudes where no boat can be lowered. Again, D'Urville, upon whose observations in natural history the utmost reliance may be placed, states it to grow in eight, ten and even fifteen brasses of water, from which depth it ascends obliquely and floats along the surface nearly as far: this gives a length of 200 feet. In the Falkland Islands, Cape Horn and Kerguelen's Land, where all the harbours are so belted with its masses that a boat can hardly be forced through, it generally rises from eight to twelve fathom water, and the fronds extend upwards of one hundred feet upon the surface. We seldom, however, had opportunities of measuring the largest specimens, though washed up entire on the shore; for on the outer coasts of the Falkland Islands, where the beach is lined for miles with entangled cables of *Macrocystis*, much thicker than the human body, and twined of innumerable strands of stems coiled together by the rolling action of the surf, no one succeeded in unravelling from the mass any one piece upwards of seventy or eighty feet long; as well might we attempt to ascertain the length of hemp fibre by unlaying a cable. In Kerguelen's Land, the length of some pieces, which grew in the middle of Christmas Harbour, was estimated at more than three hundred feet; but by far the largest seen during the Antarctic Expedition, were amongst the first of any extraordinary length which the ships encountered, and they were not particularly noticed, from the belief that the report of upwards of 1000 feet length was true; or, at any rate, that better opportunities of testing its truth would arise in the course of a three years' voyage, than the first week of our explorations could afford. These occurred in a strait between two of the Crozet Islands, where, very far from either shore, in what is believed to be forty fathoms water, somewhat isolated stems of *Macrocystis* rose at an angle of 45° from the bottom, and streamed along the surface for a distance certainly equal to several times the length of the 'Erebus';—data, which if correct, (and we believe them so) give the total length of the stems as about 700 feet.

That isolated patches of weed should rise through such a volume of water is not incompatible with the statements we have elsewhere made, that eight or ten fathoms is the utmost depth at which, judging by our experience, submerged sea-weed vegetates in the Southern temperate and Antarctic Ocean. These exceptional cases are probably due to the parent plant having attained such a size in its birth-place near shore, as to weigh its stony moorings and deposit itself in deeper water, where an increase of the roots would unite the original base to other rocks, and thus gain a footing that defies the power of the elements.

We have stated that the elongation of the *Macrocystis* may be indefinite; but this is only true partially and in the case of detached patches: for the stem of the attached plant does not gain bulk or tenacity, after a certain period; whilst the growing dimensions of the floating portion are increasing the difference between the specific gravity of the vegetable and the element it inhabits, and consequently augmenting the strain upon the slender stem by which it is attached. At some period or other, the resistance is overcome and the floating part detached from the submerged: though at what epoch this may take place, or whether it be coincident with other phases in the life of the plant, is beyond our conjecture.

The fact that fructification is produced only on the submerged young bladderless and small frond, within a few inches of the very root, is highly remarkable. What then is the function of the floating mass of the plant? to one of whose thousand leaves, each four to six feet long, the fructifying part bears an inconceivably small proportion. Were this a phænogamic plant, we should recognize, in such foliaceous expansions, organs which fulfil a respiratory and digestive office and are subservient and necessary to the development of the more important parts of the vegetable; but in this case such a mutual dependency is not so easily traced. As in *Lessonia* the multiplication of the leaves is intimately connected with the development in diameter of the stem, so in *Macrocystis* the development of fructifying fronds may take place only at the root of the barren ones, on whose previous existence they may be dependent for their origin. These are, however, questions which propose themselves to us in the closet only,

when the prospect of solving them is gone by; and when they but add to the thousand regrets over lost opportunities, the remembrance of which weighs so heavily on the mind of every naturalist, that the brightest prospects of discovery in the fair future can never obliterate them.

So many interesting points are connected with the *Macrocystis*, that a book might be instructively filled with its history, anatomy, physiology and distribution; whilst its economy, its relation to other vegetables and to the myriads of living creatures which depend on it for food, attachment, shelter and means of transport, constitute so extensive a field of research that the mind of a philosopher might shrink from the task of describing them. We conclude with an outline of its dispersion over the surface of the globe, which is wider than that of any of the large *Algæ*.

As already mentioned, the *Macrocystis* girds the globe in the Southern temperate zone, but not in the Tropics or Northern Hemisphere, and this is a most curious trait in its history. We may first, however, trace the southern edge of the belt which it forms, and we are the better enabled to do so, because the limits of its existence, as a floating plant, were observed in six different longitudes in the passage of the Antarctic Expedition as often between the Southern Sea and the Southern Ice, within which there is no vegetation. The southern boundary of the "*Macrocystis* sea" is very much determined by the position of the ice, and the northern by the currents and temperature of the water. Thus, in the longitude of New Zealand, where open sea extends to the 65th degree, this plant is found as far as 64°, the specimens having probably been drifted originally from Kerguelen's Land or the Crozets, which are the great nurseries for it in the Eastern Hemisphere, and from whence all those drifting islets have been wafted which occur between their longitude and Cape Horn. In the longitude of Cape Horn, 58° or 60° is the highest parallel it attains, for it has not been found amongst the South Shetlands; further east, in the South Atlantic, its parallel is probably still lower; till in the meridian of the Cape of Good Hope it is 40 degrees removed from the Pole, being seen no further south than 50° 30′. There the Atlantic Ocean specimens are derived from the southern extreme of America and the neighbouring islands. Its northern range on the other hand is dependent, 1st, on the temperature of the ocean;—for it neither enters the Tropics of the Atlantic, nor passes up the shores of Africa or into the Indian Ocean; whilst it does inhabit the whole surface of the Pacific Ocean and the west coast of both Americas: 2ndly, on the currents, for when north of the influence of the uniform westerly movement of the waters in the Antarctic Ocean, it is deflected with their courses and carried, while temperature allows, to whatever seas receive those waters. Thus, the South Polar current divides at Cape Horn, one portion following the west coast of South America to Cape Blanco and the Galapagos Islands under the Equator, carrying the *Macrocystis* with it, which then enters the cold waters which flow from the Arctic Islands of the Pacific, and over whose entire surface it is spread, reaching Kamtschatka, New California, and the Aleutian Islands: so that in the longitude of Western America the *Macrocystis* ranges from the Arctic to the Antarctic circle. The eastern branch of the Cape Horn current passes between the Falkland Islands and Fuegia, conveying vast masses of this sea-weed 200 miles north of the Falklands, as low as the 44th degree, and some even reaching the Plate rives in 35°, its northern limits in the Western Atlantic. Further west in the Antarctic ocean its distribution is less known; but since it does not occur far north of the Cape of Good Hope in that meridian, we may conclude that it ceases about the 34th degree. With regard to the South African habitat, it is difficult to account for so vast a quantity as the Agulhas Bank exhibits, for these waters, 130 miles in breadth, flowing with a rapid stream from the N.E. or Indian Ocean, literally swarm with *Macrocystis*, which possibly is taken up from the northern edge of the westerly Polar current (which flows along the parallel of 45° S.) by the Indian (or N. E.) current in question.

Its northern limit in the Indian Ocean is not ascertained, but it lies probably south of a line drawn north-east from the Cape of Good Hope to Australia, upon whose western shores the plant is found, as also in New Zealand, and on the coast of China to the north, to which sea it perhaps migrates from the North Pacific Ocean, Kamtschatka, &c.

PLATE CLXIX., CLXX. Frond of *M. pyrifera*, var. *luxurians*, of the natural size; 1, thin slice of fructifying

frond; 2, portion of ditto showing the two modes of escape of the spores, either free or contained in the original cells:—very highly *magnified*. (The quaternary division of the spores was not seen in this dissection.)

5. LAMINARIA, *Lamourx.*

1. Laminaria *fascia*, Ag., *Syst.* p. 278. *Harv. Phyc. Brit.* t. 45.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; not common.

These specimens do not appear to differ from British ones in any particular. The *L. fascia* is a northern, but not Arctic species, found along the shores of England, Ireland, and the German Ocean; and under the name of *L. debilis*, it also inhabits the Mediterranean Sea.

6. CAPEA, *Montagn.*

1. Capea *biruncinata*, Montagn. *in Flor. Canar. Crypt.* p. 140. t. 7. Laminaria biruncinata, *Bory in Duperrey Voy. Bot. Crypt.* p. 101. t. 10. L. radiata, β. exasperata, *Turner Hist. Fuc.* vol. ii. p. 16.

Hab. Hermite Island, Cape Horn; *J. E. Davis, Esq.*

Our solitary specimen is barren, and does not appear different from the plant of the Canary Islands, New Holland, and New Zealand.

We quite agree with Dr. Montagne as to the propriety of separating this genus from *Laminaria* and *Ecklonia*, which latter is its Cape of Good Hope representative, and is reported to be a native of the Falklands, probably erroneously; as is the station assigned to the *Macrocystis* of the Canary Islands. On the other hand, there is no reason why the *Macrocystis* should not accompany the *Capea*, whose principal parallel is certainly in the Southern Hemisphere.

The fructification of *Ecklonia* is scarcely known; we have seen what appear to be young sori in the form of opaque thickened spots on the frond. A transverse section shows the cortical layer to be thickened and formed of parallel tubes full of granules, analogous to what such fructification as Montagne's beautiful analysis of *Capea* represents would be in an immature state, but we are extremely doubtful of our analysis.

7. DESMARESTIA, *Lamourx.*

1. Desmarestia *media*, Grev., *Synops.* p. 40. Sporochnus medius, *Agardh, Ic. Alg.* p. 259. t. 16. D. anceps, *Montagne in Voy. au Pole Sud, Bot. Crypt.* p. 51?

Hab. Cockburn Island, (lat. 64° 12′ S., long. 57° W.); floating in the sea, abundant.

One of the most Antarctic of plants and probably common in many latitudes; for, under other names, it has been noticed as a native of Peru, of various parts of the Pacific Ocean, and even north to the Arctic circle. It is singular that a plant of this small genus, and from which the present is perhaps not specifically distinct, the *D. aculeata*, should be among the highest Arctic *Algæ*, inhabiting Spitzbergen in 80° N. lat. Montagne's *D. anceps*, confessedly described from imperfect specimens, is very probably this plant, having been gathered in nearly the same locality: or else it is the *D. ligulata*, a Cape Horn species.

2. Desmarestia *viridis*, Lamourx.—*Flor. Antarct.* Pt. 1. p. 178.

Var. β. *distans*; ramis remotioribus.

Hab. Hermite Island, Cape Horn, Falkland Islands, and Kerguelen's Land; very abundant. Var. β, Kerguelen's Land.

The range of *D. viridis* in the Northern Hemisphere is not extensive, and almost confined to the shores of England and of the German Ocean. It is, however, found at Unalaschka, according to Postel and Rupprecht.

8. DESMARESTIA *ligulata*, Lamourx. *Grev. Alg. Brit.* p. 37. t. 5. *Turner Hist. Fuc.* t. 99.

HAB. Hermite Island, Cape Horn; rare.

Our specimens in no way differ from European ones. It is probably a common Antarctic species, for we have received it from the east coast of Patagonia.

4. DESMARESTIA *herbacea*, Lamourx. *Montagne in Voy. au Pole Sud, Bot. Crypt.* p. 50.

HAB. Port Famine, Strait of Magalhaens; *M. Hombron.*

We have seen no Antarctic specimens of this plant, which is also a native of the Cape of Good Hope, Concepcion on the west coast of South America, and of North-west America.

5. DESMARESTIA *chordalis*, Hook. fil. et Harv.; fronde coriaceo-cartilaginea compressa anguste lineari tri-quadripinnata, pinnis pinnulisque longissimis oppositis distantibus apice longe nudis, pinnulis sæpe alternis elongatis inermibus chordiformibus. Nobis *in Lond. Journ. Bot.* vol. iv. p. 249.

HAB. Christmas Harbour, Kerguelen's Land; very abundant, in two to five fathom water.

Alga socialis, rupicola, cæspitem graminearn submarinam late extensam efficiens. *Frondes* e radice anguste scutata valde elongatæ, 3–5-pedales. *Stipes* 1–1½ lin. diametro. *Pinnæ* paulo angustiores, pinnulis ½ lin. latis.

A very noble species, recognizable at once by the long whip-like naked apices of its pinnæ. In the great abundance of this *Alga* consists one of the peculiarities in the submarine vegetation of Kerguelen's Land.

6. DESMARESTIA *Rossii*, Hook. fil. et Harv.; fronde coriaceo-cartilaginea compressa lineari bi-tripinnata circumscriptione anguste lanceolata, pinnis pinnulisque omnibus oppositis basi apiceque attenuatis acutis erectis v. ultimis appressis margine integerrimis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 249. (TAB. CLXXII., CLXXIII.)

HAB. Staten Land, *A. Menzies, Esq.* Hermite Island, Cape Horn, and the Falkland Islands; very abundant.

Frondes 4–8 ped. longæ, anguste lanceolatæ, nunc apices versus dilatatæ, inferne bipinnatæ, supra medium tripinnatæ, valde coriaceæ. *Caules* stricti, 2–3 lin. lati. *Pinnæ* 1 lin. latæ pinnulæque oppositæ, suberectæ, axillis acutis, basi apiceque attenuatæ.

Even a nobler species than the last, from its great size and opposite ramification. In general form it resembles the *D. ligulata*, but is of a totally different consistence, being much more rigid, coarser, and thicker. The fronds are sometimes curiously dilated towards the apex, when they are generally linear below the expanded portion. This appearance is produced by the upper pinnæ elongating and becoming thrice pinnated; they are then also of a paler colour than the lower ones.

PLATE CLXXII., CLXXIII. *Fig.* 1, transverse section of stem; *fig.* 2, horizontal, and *fig.* 3, vertical slice of the same:—*magnified.*

8. DICTYOSIPHON, *Grev.*

1. DICTYOSIPHON *fasciculatus*, Hook. fil. et Harv., *in Fl. Antarct.* Pt. 1. p. 178. t. 49. f. 1.

HAB. Berkeley Sound, Falkland Islands, and Christmas Harbour, Kerguelen's Land.

We have before noticed this plant, which is the Southern representative of the Northern and Arctic *D. fœniculaceus.*

9. STEREOCLADON, *Hook. fil. et Harv.*

Frons solida, olivacea, filiformis, ramosissima, e cellulis endochromate repletis longitudinaliter seriatis formata. *Sporidia* solitaria, sparsa, in frondis peripheria immersa, nigro-olivacea, elliptica.—*Genus dubiæ affinitatis, vix in tribu* Dictyotearum *includendum.*

1. STEREOCLADON *Lyallii.* (TAB. CLXXIV.)

HAB. Cape Horn, and the Falkland Islands; thrown up on the beach, rare.

Frons 5–6 unc. longa, setacea, decomposito-ramosissima, ramificatione valde irregulari. *Caulis* percurrens v. parce divisus, vix dichotome ramosus. *Rami* alterni, patentes, flexuosi, decompositi; *ramuli* omnes patentes, flexuosi v. squarrosi, multifidi, apices acuti. *Substantia* rigidula, chartæ laxe adhærens. *Color* olivaceus. *Sporidia* numerosissima, per frondis partem superiorem dense sparsa, immersa.

This remarkable plant resembles, to the naked eye, *Dictyosiphon fasciculaceus*; but its stem and branches are solid throughout, and the seeds are immersed endwise, in the substance of the branch.

PLATE CLXXIV. *Fig.* 1 and 2, portions of branch and ramuli; *fig.* 3, segment of ramulus; *fig.* 4, transverse section of fructifying stem:—*magnified.*

10. CHORDA, *Stackh.*

1. CHORDA *lomentaria*, Grev., *Alg. Brit.* p. 50. t. 9. *Fl. Antarct.* Pt. 1. p. 179.

HAB. Berkeley Sound, Falkland Islands, and Christmas Harbour, Kerguelen's Land; abundant.

Very abundant on the shores of Europe, from the Mediterranean Sea to the German Ocean. Also found in Lord Auckland's Group, but not, that we are aware, within the Tropics.

11. ASPEROCOCCUS, *Lamouroux.*

1. ASPEROCOCCUS *sinuosus*, Bory, *Morea*, p. 326. Encœlium sinuosum, *Ag. Sp. Alg.* vol. i. p. 136.

HAB. Falkland Islands; abundant. Hermite Island, Cape Horn.

The distribution of this species is very wide, continuing through the Tropics from the latitude of Spain to the Falkland Islands. We have specimens from the collections of Humboldt; also from Vogel, gathered in Tropical Africa, and from the Red Sea and Persian Gulf. It neither inhabits Northern Europe nor is found on any shores south of the Falklands.

12. ADENOCYSTIS, *Hook. fil. et Harv.*

1. ADENOCYSTIS *Lessoni*, Hook. fil. et Harv., *Fl. Antarct.* Pt. 1. p. 179. t. 69. f. 2.

HAB. Hermite Island, Cape Horn; Falkland Islands; Kerguelen's Land, and Cockburn Island, lat. 64° 12′ S., long. 57° W.; very abundant.

Apparently quite an Antarctic species, though much resembling some of the *Dumontiæ* figured in Postel and Rupprecht's great work on the *Algæ* of the Arctic and Pacific Oceans.

2. ADENOCYSTIS *D'Urvillæi*, Hook. fil. et Harv. Asperococcus D'Urvillæi, *Bory in Duperrey Voy. Bot.* p. 200. t. 11. f. 3.

HAB. Berkeley Sound, Falkland Islands; with the former.

We are inclined to regard this as a slender state of the *A. Lessonii*, which is exceedingly variable when young.

Fitch, del et Lith.

Reeve imp

Stereocladon Lyallii. Hook fil et Harv.

13. SPHACELARIA, *Lyngb.*

1. Sphacelaria *obovata*, Hook. fil. et Harv.; parvula, gracilis, pallide viridis, stupa nulla, fronde circumscriptione obovata, caule gracili articulato basi longe nudo supra medium ramis plurimis tenuibus elongatis erecto-patentibus laxe distiche pinnatis ornato apicibus sphacelatis. Nobis *in Lond. Journ. of Bot.* vol. iv. p. 251.

Hab. St. Martin's Cove, Hermite Island, Cape Horn, in about eight fathom water; very scarce.

Cæspitosa, superne fastigiatim ramosa. *Frondes* 1–1½ unc. longæ, caule ramisque gracilibus, per totam longitudinem articulatis.

We have seen no specimens of this, but what were dredged up from a considerable depth; and, if fully grown, the outline of the frond alone is sufficient to distinguish it from its congeners.

2. Sphacelaria *funicularis*, Mont. *Fl. Antarct.* Pt. 1. p. 180.

Hab. Cape Tres Montes, South Chili; *C. Darwin, Esq.*

The representative of the European *S. scoparia*. We have a note, unaccompanied, however, by any specimen, purporting that this species was also found in the Falkland Islands.

14. CLADOSTEPHUS, *Ag.*

1. Cladostephus *spongiosus*, Agardh, *Sp. Alg.* vol. ii. p. 15. *Engl. Bot.* t. 2427. f. 1.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; abundant.

This plant varies considerably at several periods of the year, becoming bare of ramuli in the winter. It is abundant in the German Ocean and on the Atlantic shores of Europe, and extra tropical North America, in the Mediterranean Sea and Canary Islands, but has not been hitherto found within the Tropics. We regard these specimens as specifically identical with others of British growth.

15. ECTOCARPUS, *Lyngb.*

1. Ectocarpus *tomentosus*, Lyngb. *Grev. Crypt. Flor.* t. 316.

Hab. St. Martin's Cove, Hermite Island, Cape Horn; rare.

The European shores of the Atlantic Ocean and the German Sea are the only previously recorded habitats for this species.

2. Ectocarpus *siliculosus*, Lyngb. *Engl. Bot.* t. 2319.

Hab. Hermite Island, Cape Horn, and Berkeley Sound, Falkland Islands; abundant.

Apparently a much more widely distributed species than the former, ranging from the Baltic Sea and German Ocean to the Mediterranean and Canary Islands, also along the shores of the United States. In the Southern hemisphere it has been found at the Cape of Good Hope and New Zealand.

3. Ectocarpus *geminatus*, Hook. fil. et Harv.; cæspite basi intricato ramoso olivaceo v. virescente, filis majusculis tenuibus ramosissimis apice liberis plumosis, ramis ramulisque patentibus oppositis quaternisve ultimis brevibus, utriculis sessilibus oppositis conicis basi sæpe ramulo brevi bracteæformi suffultis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 251.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; abundant.

Cæspites 4–5 unc. longi, basi e ramulis perplurimis implexis intricati. *Rami* primarii circumscriptione lineari-obovati, plerumque quaterni, secundarii ramulique ultimi oppositi, patentes. *Utriculi* semper oppositi, ramulo bracteæformi duplo longiores.

In habit and general appearance resembling the European *E. granulosus*; but abundantly different in the constantly opposite sessile conical capsules or utricles, which are generally subtended by a minute ramulus half their own length.

16. MESOGLOIA, *Ag.*

1. Mesogloia *linearis*, Hook. fil. et Harv.; virescens, fronde circumscriptione lineari, caule gracili indiviso v. rarius diviso ramis brevibus ornato, ramis alternis crebris abbreviatis flexuosis erecto-patentibus, ramulis subsecundis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 251.

Hab. Hermite Island, Cape Horn; rare.

Frondes 4–6 unc. longi, vix ½ lin. diametro, pallide flavo-virescentes. *Caulis* gracilis, indivisus v. basi ter quaterve divisus, rarius medium versus in ramos 2 primarios fissus. *Rami* perplurimi, ½–¼ unc. longi, flexuosi, interdum basin versus caulis nudi v. ramulis paucis aucti. *Ramuli* secundarii plerumque e margine inferiore seu exteriore ramorum orti. *Peripheriæ filamenta* moniliformia, e substantia gelatinosa vix exserta.

Probably the representative of the European *M. vermicularis*, from which it may be at once distinguished by the ramification.

17. DELESSERIA, *Lamourx.*

1. Delesseria *sanguinea*, Lamourx. *Engl. Bot.* t. 1041.

Var. β. *lancifolia*; fronde elongata anguste lineari-lanceolata ligulatave utrinque angustata.

Hab. Hermite Island, Cape Horn; on rocks, abundant near the shore, also dredged up in five or six fathom water.

Hitherto known only as an inhabitant of the seas of the Northern hemisphere; where its range is not wide. In the southern it appears to be confined to the extreme south of America, flourishing in the deep bays which indent the coasts of Fuegia. Some specimens are altogether similar to those of European growth; others, of which we have constituted the var. *lancifolia* are larger, longer, sometimes almost a foot long, much narrower, and more attenuated at both ends. It is a very handsome variety.

2. Delesseria *Davisii*, Hook. fil. et Harv.; caule cartilagineo alato, lamina profunde pinnatifida v. pinnata, laciniis pinnisve cultrato-lanceolatis obliquis costatis penninerviis, nervis alternis, demum inter nervos alterne v. secunde lacerato-laciniatis, lacinulis erecto-patentibus costatis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 52. (Tab. CLXXV.)

Hab. Hermite Island, Cape Horn; abundant. Falkland Islands, Berkeley Sound, *Dr. Lyall.*

Frons 5–7-uncialis, alata v. latiuscule marginata, basi in caulem brevem abrupte attenuata, circumscriptione late ovato-rotundata, in lacinias perplurimas simplices v. partitas distichas costatas divisa, rosea, membranacea. *Laciniæ* plerumque secus marginem exteriorem oblique ad costam fissæ, ¼–⅛ unc. latæ, obtusæ v. subacutæ.—Inter *D. alatam* et *D. sanguineam* quasi media, sed utraque sat diversa.

This is perhaps most closely allied to *D. sanguinea*, from which it may be distinguished by the alternate nervation and dividing of the frond. The *D. alata*, which it is also near, differs in the texture and colour of its frond. No fruiting specimens were found.

Delesseria Davisii Hook. fil. et Harv.

Fitch. del. et lith.

Reeve, imp.

Delesseria Lyallii Hookfil et Harv.

J. D. Iredale, Fitch lith.

Plate CLXXV. The absence of fructification precludes the necessity of dissections.

3. Delesseria *platycarpa*, Lamouroux., *in Ann. du Mus.* vol. xx. p. 124. *Agardh, Sp. Alg.* vol. i. p. 188. *Turner, Hist. Fuc.* t. 144.

Hab. Falkland Islands; abundant in Berkeley Sound and Port William.

Originally discovered at the Cape of Good Hope, where it is very abundant. More recently it has been gathered on the coast of California, whence its existence in the Falkland Islands might have been considered probable, even before its recent discovery in that part of the Southern Ocean. It is very plentiful on the long shelving beaches of the islands in question, but was not seen on the deeper and more rocky shores of Fuegia.

4. Delesseria *crassinervia*, Mont. *Fl. Antarct.* p. 184.

Var. β. costa angustiore.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; both varieties abundant. Kerguelen's Land; Christmas Harbour, var. α only.

Were the var. β. found upon the coast of Europe, it would be undoubtedly referred to *D. hypoglossum*, and it may well be considered very doubtful whether the *D. crassinervia* of the Southern Hemisphere be the representative of its northern congener, into the likeness of which it varies; or whether, as is perhaps more probable, both are not varieties of the same species. The true *D. ruscifolia* is a native of the Cape of Good Hope, of Tasmania, and, according to Gaudichaud, of the Falkland Islands also.

5. Delesseria *quercifolia*, Bory *in Duperrey Voy. Bot.* p. 186. t. 18. f. 1.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; most abundant both on the outer coasts and in the harbours.

A very handsome species, of which M. Bory gives a sufficiently characteristic but discoloured figure. The original colour of the plant is a rosy or vinous red. In every respect, except the position of the granules, which are here scattered over the surface of the frond, this is very nearly allied to *D. sinuosa*, Ag.

6. Delesseria *Lyallii*, Hook. fil. et Harv.; fronde lineari-oblonga obtusa costata penninervi argute serrato-dentata, nervis oppositis, margine incrassato folia consimilia petiolata emittente, dentibus subulatis simplicibus v. latere inferiore plerumque erosis, coccidiis frondis pagina sparsis, granulis in soros inter nervos laciniarum sitos dispositis. *Nobis in Lond. Journ. Bot.* vol. iv. p. 252. (Tab. CLXXVI.)

Hab. Falkland Islands; on the outer coast only, probably washed ashore from the exposed rocks. Kerguelen's Land; Christmas Harbour, washed up on the shores.

Frons primaria exemplaribus Kerguelensibus 9 unc., Falklandicis 4–5 unc. longa, 1–1½ unc. lata, in petiolum cylindraceum gradatim angustata, oblonga v. linearis, apice rotundata, costa valida percursa, venosa, venis oppositis, erecto-patentibus, margine argute serrato-dentata, sed non sinuata, incrassata, foliola seu frondes secundarias emittens? *Frondes secundariæ* primariis consimiles, sed plerumque minores, omnes evidenter petiolatæ, e margine incrassato frondis primariæ ortæ, venis ejus oppositæ v. alternæ. *Color* luride sanguineus.

D. sinuosæ habitu formaque frondis colore et substantia simillima: differt margine incrassato, dentato, non sinuato, et præsertim frondibus secundariis evidenter petiolatis, nunquam e laciniis frondis primariæ ortis.

A very noble species, of which fine specimens were collected, thrown up on the stony shores of Kerguelen's Land and the outer coasts of the Falkland Islands; and which, as it was never seen attached, either in the shallow or deep bays of any of the coasts visited by the Expedition, finds, we conclude, a congenial home amongst the wild breakers that fringe many parts of these iron-bound coasts. Specifically it is allied to the European *D. sinuosa*.

from which it differs remarkably in the thickened margin of the frond not being sinuated, but proliferous; in the leaves all being petiolate and arising from the margin, and not from lacinie of the frond; and in the position of the fructification.

We have, in figuring the nobler species of this and some other genera, endeavoured to commemorate the services rendered to the botany of the Antarctic regions by those officers of the Antarctic Expedition who particularly devoted themselves to increasing the botanical collections. Their names appear to be more properly associated with the *Algæ*, than with any other tribe of plants; comprising, as these do, the greater part of the vegetation of that element which these gentlemen have adopted for their home, and being natives of the regions they have so successfully explored.

PLATE CLXXV. *Fig* 1, apex of frond and sori; *fig.* 2, portion of ditto showing the spherospores:—highly *magnified*.

18. NITOPHYLLUM, *Grev.*

1. NITOPHYLLUM *lividum*, Hook. fil. et Harv.; fronde e stipite brevi filiformi cartilagineo late expansa tenerrima basi vix venosa furcata v. dichotoma margine undulata livido-purpurea, laciniis patentibus oblongis obtusis, soris minutissimis punctiformibus coccidiisque perplurimis per totam frondem sparsis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 253. (TAB. CLXXIX.)

HAB. Falkland Islands; Berkeley Sound and Port William, not uncommon.

Stipes cartilagineus, filiformis, ½–1 unc. longus, ad basin frondis evanidus. *Frons* 4 unc. longa, 6 v. plures lata, in lacinias paucas latiusculas furcatas apice obtusas divaricatas divisa, avenia, nisi ad imam basin, ubi stipes in venas breves evanidas abiit. *Substantia* tenerrima. *Color* livide purpureus, ut in *Porphyra*, sed vix nitens.

The colour affords a very distinctive character for this species, in which particular it resembles only one of its congeners, the *N. Gunnianum*, Harv., of Tasmania. But that plant, is of a much thicker texture and less lubricous. A single imperfect specimen from Cape Horn probably belongs to the *N. lividum*. Of the mass of radiating spores contained in the capsules of the species, only those at the base of the cavity are fertile.

PLATE CLXXIX. *Fig.* 1, sori; *fig.* 2, capsule; *fig.* 3, vertical section of the same; *fig.* 4, portion of ditto:—all highly *magnified*.

2. NITOPHYLLUM *fusco-rubrum*, Hook. fil. et Harv.; stipite filiformi elongato nunc dichotome ramoso nudo, ramis frondiferis, frondibus flabelliformibus lobatis v. longitudinaliter fissis crasso-membranaceis fusco-rubris, basi cuneatis in stipitem gradatim angustatis tenuiter venosis, margine plano subintegerrimo, apicibus (exemplaribus nostris) laceris, soris minutissimis punctiformibus coccidiisque numerosissimis per totam frondem sparsis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 254.

HAB. Kerguelen's Land; parasitical on larger sea-weeds in Christmas Harbour.

Stipes 1–8 unc. longus, simplex v. irregulariter ramosus, ramis in frondes cuneatas elongatas exeuntibus. *Frondes* 3–5 unc. longæ, latitudine variæ, ima basi obscure venosæ, irregulariter profunde fissæ, laciniis cuneatis linearibusve. *Sori* minimi, inconspicui. *Sphærosporæ* plerumque solitariæ, per totam paginam frondis creberrime sparsæ. *Coccidia* frondibus distinctis numerosa. *Substantia* firma, basi subcartilaginea. *Color* luride fusco-ruber.—Stirps *N. ulvoideo*, Hook. similis, sed abunde differt colore, sphærosporis sparsis, stipiteque ramoso elongato.

Apparently a native of Kerguelen's Land only, where it was found sparingly, adhering to the stems of larger *Algæ*. The colour, texture, and branching stem at once distinguish this from its congeners.

3. NITOPHYLLUM *Crozieri*, Hook. fil. et Harv.; fronde basi longe cuneata in stipitem angustata lineari-lanceolata v. ovata v. late ovato-lanceolata integerrima v. in lacinias plurimas longitudinaliter fissa enervi

Nitophyllum lividum, Hook.fil.et Harv.

Nitophyllum Crozierii. Hook fil et Harv.

Nitophyllum Smithii Hook fil. et Harv.

tenerrima roseæ, soris majusculis oblongis coccidiisque per frondem sparsis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 254. (Tab. CLXXVII.)

Hab. Hermite Island, Cape Horn; abundant in deep water.

Radix discus cartilagineus. *Stipes* gracilis, ½–¾ unc. longus, cartilagineus, superne alatus, basin in frondem cuneatam abeuns, deinde gradatim evanescens. *Frons* 8–12 unc. longa v. longior, latitudine varia, lineari-oblonga v. late ovato-rotundata, integerrima v. in lacinias fissa, adultior punctis crebriformibus pulcherrime terebrata, apice exemplaribus nonnullis attenuata, margine integerrima, undulata, plus minusve in lacinias fissa, subavenia v. basi solum nervis indistinctis e apice stipitis ortis notata. *Sori* numerosissimi, per totam frondis paginam sparsi. *Substantia* tenerrima. *Color* pulcherrime roseus.

One of the most beautiful of the genus, and probably the southern representative of the European *N. punctatum*, chiefly distinguishable from it by the long cuneate base of the frond passing into a filiform stem and by the absence of dichotomous divisions with wide axils. The traces of the stem become gradually more faint at a short distance from the base of the frond, but do not break up into numerous veins. The normal form of the frond is broadly lanceolate, tapering to an acute point; with waved but entire margins, which are, however, often split and torn into numerous linear ribbon-like segments, caused by injury and not the natural divisions of the frond.

Plate CLXXVII.—*Fig.* 1, portion of frond and sorus:—*magnified.*

4. Nitophyllum *multinerve*, Hook. fil. et Harv.; fronde breviter stipitata elliptica v. ovata subintegerrima v. lobata, nervis pluribus parallelis distinctis dichotomis apicem versus frondis evanescentibus, soris? Nobis *in Lond. Journ. Bot.* vol. iv. p. 255.

Hab. Hermite Island, Cape Horn, and Falkland Islands; Berkeley Sound, on rocks, not common.

Stipes plerumque ½–¾ unc. longus, nunc pollicaris, simplex. *Frons* in lacinias plurimas obtusas cito fissa, 2–4 unc. longa, basi rotundata v. cuneata; nervis plurimis, validis, ad apicem frondis evanidis. *Substantia* membranacea. *Color* roseus.

Of this plant we have not very satisfactory specimens, or which may not belong to the *Delesseria dichotoma*: except that in the present species the nerves are much fainter, less distinct from the lamina, and vanishing further from the apex of the frond, which evinces no tendency to form distinct leaves.

5. Nitophyllum *Smithii*, Hook. fil. et Harv.; fronde stipitata flabelliformi lobata basi cuneata superne divisa et laccra, apicibus laciniarum obtusis, marginibus planis, colore rubro subfuscescente, nervosa, nervis gradatim evanescentibus basilari centrali crasso lateralibus radiantibus tenuibus nunc evanidis, soris minutis rotundatis margines versus laciniarum frondis densissime sparsis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 256. (Tab. CLXXVIII.)

Hab. Falkland Islands; in the bays and along the outer sea coast, growing on the roots of larger *Algæ*.

Frons 4–7 unc. longa, angusta v. latiuscula, in stipitem simplicem v. ramosum ½ unc. longam et ultra desinens, forma varia; nunc elongatæ, laceræ; juniores latiores, lobatæ: lacinitis latis, obtusis, emarginatis retusisve. *Nervus* centralis elongatus, basi latus, frondibus senioribus ultra medium extensus, junioribus cito evanidus; laterales ad basin frondis flabellatim expansi, oblique arcuati. *Substantia* crassiuscula. *Color* ruber, demum fuscescens.

This is a very distinct species; but, like its congeners, so variable in form that little dependence can be placed on the characters drawn from its outline, or from the length of the stipes. Our figure gives a very faithful representation of the colour and normal form of the old and young states, both veined and nearly veinless.

Plate CLXXVIII.—*Fig.* 1, portion of frond and tetraspores; *fig.* 2, ditto with coccidium:—both *magnified.*

6. NITOPHYLLUM *Bonnemaisoni*, Grev.; *Alg. Brit.* p. 81.

Var. *laciniatum*, fronde flabelliformi profunde digitatim lobata v. subdichotome pinnatifida, laciniis inciso-dentatis. N. laciniatum, *nobis in Lond. Journ. Bot.* vol. iv. p. 256.

HAB. var. *laciniatum*. Hermite Island, Cape Horn; on rocks in deep water. Falkland Islands; not common.

Though not exactly identical with our European *N. Bonnemaisoni*, we cannot consider this as more than a variety of that plant, which is occasionally found in Britain nearly as much laciniated as the specimens before us are. Stipes, in the Antarctic specimens, $\frac{1}{4}$–$\frac{1}{2}$ inch long, terminating in the thickened cuneate base of the frond, which is 4–5 inches long, and deeply cleft into 5–9 segments, either radiating from the centre in a digitate manner, or springing like pinnules from a lengthened rachis. Colour, a pale brownish-red at the base, becoming rosy upwards.

The *N. Bonnemaisoni* in the Northern Hemisphere inhabits the Orkney Islands, the west coasts of Scotland and Ireland, and the south-western shores of England.

19. PLOCAMIUM, *Lyngb.*

1. PLOCAMIUM *coccineum*, Lyngb.; *Harv. Phyc. Brit.*, t. 44. *Fl. Antarct.* p. 186.

HAB. Hermite Island, Cape Horn, and the Falkland Islands; very abundant.

The present is one of the most widely diffused of the *Florideæ*, both in the Northern and Southern Hemisphere. In Europe it ranges from the shores of the Mediterranean Sea to the North Cape. In Africa it occurs at the Cape of Good Hope, in North America on the coast of California, and it is abundant, on the Atlantic shores of the United States. It inhabits both coasts of South America, but particularly the western; Tasmania, New Zealand, and the Auckland Islands. The Antarctic specimens are equally luxuriant with those of the Northern Hemisphere.

2. PLOCAMIUM *Hookeri*, Harv.; fronde cartilaginea anguste lineari compressa plana distiche decomposite ramosa, ramis primariis subdichotomis patentibus, secundariis alternis flexuosis folia ramulosque alterne gerentibus, foliis planis aveniis oblique obovato-lanceolatis obtusis basi angustatis cultratis integerrimis v. margine exteriore crenatis, ramulis linearibus alterne et secunde pectinato-multifidis, stichidiis brevibus lateralibus dense fasciculatis digitatis laciniatis simplicibus obtusis, coccidiis lateralibus sessilibus sparsis. *Harv. in Lond. Journ. Bot.* vol. iv. p. 257.

HAB. Kerguelen's Land; Christmas Harbour; thrown upon the beach, rare.

Frons 8–10 unc. longa, vix lin. diametro, plano-compressa, cartilaginea, nunc subdichotome nunc pinnatim ramosa. *Rami* primarii patentes; secundarii circumscriptione lineares, alterni, flexuosi, ramulos decompositos foliaque gerentes: foliis $\frac{1}{4}$ unc. longis, $1\frac{1}{2}$–3 lin. latis, anguste obovatis lanceolatisve, obtusis, aveniis, integerrimis v. rarius secus marginem exteriorem crenatis. *Color* luride roseus.

One of the most singular species of the genus, from the curious leaf-like appendages on the secondary and lesser branches. It is a very rare plant in Christmas Harbour, and cannot be confounded with any of its congeners.

3. PLOCAMIUM? *Magellanicum*, Hook. fil. et Harv. Thamnophora Magellanica, *Montagne in Voy. au Pole Sud, Bot. Crypt.* p. 142. t. 8. f. 2.

HAB. Hermite Island, Cape Horn; the Falkland Islands, and Kerguelen's Land; very abundant.

Of this plant we have very copious suites of specimens, gathered in the localities above enumerated and varying in length from 2 or 3, to 4 or 8 inches; most of them are covered with coccidia, though none presents us with a single stichidium; which is the more remarkable, because, in other species of this genus the latter description of fruit is the most general.

Under the *P. coccineum*, in the first portion of this work, the reasons for abandoning the genus *Thamnophora* are detailed; whether or not the present plant belongs to *Plocamium* even, must remain uncertain until the nature of the stichidia is known.

20. RHODYMENIA, *Grev.*

1. Rhodymenia *palmata*, Grev.; *Alg. Brit.* p. 93. Fucus palmatus, *Engl. Bot.* t. 1306.

Hab. Berkeley Sound, Falkland Islands; abundant. Hermite Islands, Cape Horn; rare.

The Dulse, so commonly eaten on the coasts of Scotland, is not an unfrequent sea-weed on the shores of the Falkland Islands, where it was quickly recognized by some of the north-country seamen of the 'Erebus' and 'Terror.' In Europe its distribution is from the Canary Islands and Mediterranean Sea, to the coasts of Norway and Ireland. Dr. Greville mentions that it is a native of the shores of Brazil.

2. Rhodymenia *sobolifera*, Grev.; *Alg. Brit.* p. 95. Fucus soboliferus, *Eng. Bot.* t. 2133.

Hab. Falkland Islands; in Berkeley Sound, and on the exposed outer sea-coast; abundant.

Apparently identical with a sea-weed which inhabits the western shores of Ireland, Scotland, and the Orkney Isles, and has also been gathered on the west coasts of France. It is scarcely more than a variety of *R. palmata*, whether occurring in the north or south temperate oceans.

3. Rhodymenia *corallina*, Bory; *in Duperrey Voy. Bot. Crypt.* p. 175. t. 16.

Hab. Christmas Harbour, Kerguelen's Land; rare.

We have referred our single specimen, without fruit, to this species; with which it appears entirely to agree. The species is not uncommon along the Pacific shores of South America, between the latitude of Concepcion and the Equator.

4. Rhodymenia *Palmetta*, Grev.; *Alg. Brit.* p. 88. t. 12.

Hab. Straits of Magalhaens, *D'Urville*; Falkland Islands, *Gaudichaud.*

Of this species we have seen no southern examples.

5. Rhodymenia *fimbriata*, Grev.; *Synops.* p. 48. Sphærococcus fimbriatus, *Agardh, Spec. Alg.* vol. i. p. 299.

Hab. Falkland Islands, *Gaudichaud.*

This again is a plant which we do not recognize amongst the collections brought from the Southern Hemisphere.

6. Rhodymenia *variegata*, Montagne; *in D'Orbigny Voy.* p. 22. and 116 *in Obs.* Halymenia variegata, *Bory in Duperrey Voy. Bot. Crypt.* p. 179. t. 14. R. Hookeri, *Harv. in Lond. Journ. of Bot.* vol. iv. p. 258. R. glaphyra, *Suhr, in Flora*, 1839, vol. i. p. 69. t. 2. f. 43.

Var. *a. flabellata*; fronde stipitata rosea v. sanguinea flabellata fere ad basin partita, laciniis manifeste flabelliformibus basi cuneatis repetite di-tri- vel palmatim dichotomis, laciniis linearibus $\frac{1}{2}$–$\frac{1}{4}$ unc. latis,

margine lacinulis brevissimis truncatis quadratis alternis ornato, axillis rotundatis:—*R. Lamberta* forma similis, sed substantia differt.

Var. *β. atro-sanguinea*; fronde substipitata atro-sanguinea palmato-fissa, laciniis obtusis erectis subdichotome v. alterne divisis margine proliferis, axillis rotundatis. Color luridior quam in var. *α*.

Var. *γ. latissima*; fronde 10 unc. longa ad pedalem, laciniis parum divisis apice truncatis 1-4 unc. latis. Varietas a cæteris valde diversa, sed certe nil nisi forma gigantea.

Var. *δ. lacerata*; inter varietates *α* et *β* media:—frons subsessilis divisa.

Var. *ε. prolifera*; fronde 1½–2 unc. longa subdichotoma, laciniarum marginibus proliferis lacinulas numerosas angustissimas furcatas v. irregulariter ramulosas acutas emittentibus.

Var. *ζ. pulcherrima*; laciniis angustis decomposito-ramosis, pinnulis ultimis elongatis emarginatis.

Hab. Hermite Island, Cape Horn; var. *α*. Falkland Islands; var. *α. β.* (on the outer sea-coast) and *ζ.* (in Berkeley Sound) Kerguelen's Land; vars. *α. γ. δ.* and *ε*. All very abundant in Christmas Harbour.

A more variable species can scarcely be imagined: so dissimilar are its forms that the more distinct of them were unhesitatingly pronounced to be different species, before the whole suites of specimens were collated. In Kerguelen's Land it is one of the most common of *Algæ*; and the varieties, collected there and noted as belonging to the one species, are connected by various links with one another, and with the forms of Cape Horn, the Falkland Islands, and of the American coast. The dark coloured variety, *β. atro-sanguinea*, is evidently sea-beaten, and though generally destitute of the marginal tooth-like laciniæ, so conspicuous in *α*, there are specimens possessing them, which connect the two forms. The var. *γ. latissima* is the best marked, more, perhaps, by its great size than by its presenting any positive characters: it was gathered along with *α* and *δ*, and referred when fresh to the same species. In the Falkland Islands the var. *ζ.* is conspicuous for having few, and but sparingly divided principal segments, about ½ inch wide, suddenly passing into narrow much-divided minor segments from ½–1 line broad. Though at first sight abundantly distinct from *β.* or *γ.*, it is immediately connected with them both through var. *α*.

We follow Endlicher in quoting Suhr's figure of *R. glaphyra* as a synonym of this species: the representation is, however, anything but characteristic of an *Alga*.

7. Rhodymenia *variolosa*, Hook. fil. et Harv.; fronde carnoso-membranacea sanguinea in lacinias plures late lineares v. cuneatas elongatas furcatas dichotomasve ad basin fere divisa, laciniis basi angustatis erectis apice obtusis emarginatisve, coccidiis? superficialibus densissime conspersis sessilibus pedicellatisve deciduis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 259. (Tab. CLXXX.)

Hab. Christmas Harbour; Kerguelen's Land.

Frons 2–3 v. 7–8 unc. longa, ad basin fere in lacinias fissa. *Laciniæ* ½–1 unc. latæ, e basi angustata sensim latiores, furcatæ, bis terve dichotome divisæ, sinubus latis obtusis, margine integerrimo v. parce prolifero, super subterque corporibus granuliferis (coccidia?) sparsæ. *Coccidia?* (in genere abnormalia) superficialia, subglobosa, basi angusta frondis affixa, cito decidua.

Allied to the *R. variegata*, especially in form, but of a firmer texture and brighter colour; and very different in the nature of the fructification, which is easily detached, leaving only a small puncture on the surface of the laciniæ: this constitutes the peculiar character of the species. In the structure and form of the frond there is some affinity with the *Gracilaria polycarpa* of the south of England and California; but the fruit of that plant is quite different.

Rhodymenia variolosa. Hook fil. et Harv.

Acanthococcus Antarcticus, Hook. fil. et Harv.

PLATE CLXXX.—*Fig.* 1, portion of frond and coccidia; *fig.* 2, portion of ditto vertically sliced; *fig.* 3, spores from the same; *fig.* 4, immature ditto:—all highly *magnified*.

21. ACANTHOCOCCUS, *Hook. fil. et Harv.*

Frons linearis, compressa, distiche ramoso, cartilagineo-carnosa, rosea. *Axis* solidus, densus, e cellulis minutissimis formatus, tubulis magnis pluriseriatis extus sensim minoribus circumdatus. *Peripheria* celluli parvis reticulata. *Coccidia* globosa, in apicibus ramulorum immersa, sporis numerosissimis repleta.

1. ACANTHOCOCCUS *Antarcticus*, nobis, *in Lond. Journ. Bot.* vol. iv. p. 261. (TAB. CLXXXI.)

HAB. Cape Horn and the Falkland Islands; not uncommon, and parasitic.

Frons 4–8 unc. longa, compressa, anguste linearis, basi semilineam vix lineam latitudine, sursum sensim angustata, distiche ramosissima. *Rami* patentes vel divaricati, nunc flabellatim multifidi, nunc pinnati et bipinnati; secundarii nunc breves subsimplices, nunc longisimi, ramosissimi. *Ramuli* per totam frondem sparsi, apicem versus crebriores, erecti et erecto-patentes, subulati, 1–3 lineas longi, alterni vel sæpius secundi, simplices vel parum divisi. *Coccidia* solitaria, globosa, spinis 4–6 magnis subulatis armata, in apicibus ramulorum immersa, sporis numerosissimis minutis repleta. *Tetrasporæ* ignotæ. *Color* intense ruber, siccitate obscurior. *Substantia* firma, cartilagineo-carnosa:—chartæ adhæret.

We cannot satisfactorily include this plant under any established genus. It belongs, unquestionably, to the *Sphærococcæ* and will stand near *Hypnea*, from which it differs in the structure of the frond, as well as in the fructification. The densely cellular axis, surrounded by large empty cellules or tubes, is seen in *Hypnea musciformis*, and also in *Gracilaria purpurascens*. Outwardly there is a close resemblance between our plant and *Heringia rostrata*, J. Ag., (*Gelidium? rostratum*, Griff.; *Fucus alatus*, and *angustissimus*, Turn.); but, besides the dissimilar fructification, the structure of that plant is uniformly dense, without a trace of large cellules, or tubes. Again, the present plant may be compared with *Microcladia*, which it approaches in habit; and to a certain extent, the spinous *coccidia* may be deemed analogous to the involucrated *favellæ* of that genus; but, in *Microcladia*, the axis, far from being the most dense part of the frond, is tubular.

PLATE CLXXXI.—*Fig.* 1, ramulus; *fig.* 2, apex of ditto with cocidium; *fig.* 3, transverse section of ramulus; *fig.* 4, longitudinal section of coccidium:—all *magnified*.

22. GRACILARIA, *Grev.*

1. GRACILARIA (?) *nigrescens*, Hook. fil. et Harv.; radice fibrosa, frondibus purpurascentibus cæspitosis e basi irregulariter dichotoma et intricata ramosissimis gracilibus subcylindraceis obscure compressis flexuosis flaccidis carnoso-membranaceis, axillis obtusis sæpissime latis, ramis decompositis sensim angustatis, ramulis filiformibus v. subulatis acutis, ultimis sæpe secundis. G. obtosangula, *nobis in Lond. Journ. Bot.* vol. iv. p. 260. Sphærococcus subulatus, *β.* nigrescens, *Agardh, Sp. Alg.* p. 329.

Var. *β. tenuior*, ramis strictioribus divaricatis, axillis patentibus.

HAB. Hermite Island, Cape Horn, and the Falkland Islands; not uncommon. Var. *β.* Falkland Islands.

Frons basi repens et fibrosa, filiformis, 4–6 unc. longa, ¼ lin. lata, subcompressa. *Color* luride purpureus, ut in *G. purpurascente*.

In the absence of fructification we refer this doubtfully to the genus *Gracilaria*, chiefly from its close resemblance to the *G. purpurascens* in the essential characters of the frond. We have never seen original or any other specimens of the *Sphærococcus subulatus*, var. *nigrescens*, and owe the identification of our specimens with that plant to the kindness of our friend Dr. Montagne.

2. Gracilaria (?) *aggregata*, Hook. fil. et Harv.; cæspitosa, nigrescens, frondibus fastigiatis e basi communi late scutata carnosa ortis plurimis filiformibus, primariis cylindraceis cartilagineis vage subdichotome ramosis, axillis angustis, ramis erectis simplicibus furcatisve omnibus compresso-cylindraceis filiformibus superne subfastigiatis apicibus obtusis, fructu ——? Nobis *in Lond. Journ. Bot.* vol. iv. p. 261.

Hab. Falkland Islands; on rocks in Berkeley Sound, *Dr. Lyall.*

Frondes 3–4 unc. altæ, vix ½ lin. diametro, e basi scutata, ¼ unc. latæ, dense fastigiatæ, siccitate rigidæ, madore cartilagineæ, irregulariter superne præcipue ramosæ, basi cylindraceæ, interdum simplices, nunc e basi regulariter dichotome ramosæ. *Rami* omnes erecti, axillis angustis, sinubus obtusiusculis, ultimi paulo latiores. *Color* nigro-purpurascens, siccitate ater;—chartæ non adhæret. Habitu *Polyidis rotundi*.

Of this, again, we have seen no fruit; but the structure of the frond is exactly that of the genus *Gracilaria*, to which we consequently refer it.

23. POLYSIPHONIA, *Grev.*

1. Polysiphonia *atro-rubescens*, Grev. *Harv. in Brit. Fl.* vol. ii. p. 331.

Hab. Berkeley Sound, Falkland Islands; scarce.

Only a few specimens of this species, and in an immature state, were procured: they very closely approach British ones in structure, but are, perhaps, more branched; though we can detect no specific differences between them. They differ from the following species in substance and in wanting the fibrillous apices of the ramuli; the latter, however, is an unimportant character.

The species ranges from the Mediterranean Sea to the coasts of Scotland.

2. Polysiphonia *fusco-rubens*, Hook. fil. et Harv.; atro-rubescens, obscure articulata, rigidiuscula, multistriata, frondibus irregulariter dichotomis, caule angulatim flexuoso gracili sensim attenuato, ramis majoribus dichotomis, minoribus alternis strictis elongatis, ramulis paucis subulatis erecto-patentibus, axillis primariis patentibus secundariis acutis, articulis e tubulis octo radiantibus coloratis formatis, ramorum diametro duplo-triplo-quadruplove, ramulorum sesquilongioribus. (Tab. CLXXXII. Fig. I.)

Hab. Falkland Islands; *Mrs. Capt. Sulivan.*

Caules primarii ramosissimi, fasciculati, 6–8-unciales, graciles, filiformes, basi nudi, superne sub-angulatim flexuosi, ad angulos ramos 2 unc. longos emittentes, rigiduli. *Rami ramulique* erecto-patentes, laxe pluries divisi, fasciculati, ultimi longitudine varii, ½–2 lin. longi, elongati v. subulati, omnes rigidiusculi. *Color* atro-rubescens:—chartæ laxe adhæret.

Very similar indeed to the *P. atro-rubescens*, but differing in the flexuose stem; also allied to *P. anisogona*, nob., but of a totally different texture and consistence.

Plate CLXXXII. *Fig.* 1.—1, ramuli; 2, apex of ditto; 3, transverse section of ditto:—all *magnified.*

3. Polysiphonia *anisogona*, Hook. fil. et Harv.; atro-rubescens, flaccida, madore fragillima, frondibus cæspitosis irregulariter ramosissimis æqualibus setaceis articulatis vix attenuatis, ramis ramulisque alternis subdichotomisve erectis v. uppressis, axillis angustissimis, articulis variis inferioribus diametro sextuplo, superioribus duplo triplove longioribus, ultimis sesquilongioribus v. quadratis, omnibus striis sex notatis e tubulis duodecim tenuibus radiantibus endochromate repletis formatis, ceramidiis ——? Nobis *in Lond. Journ. Bot.* vol. iv. p. 268. (Tab. CLXXXII. Fig. II.)

Hab. Hermite Island, Cape Horn, and the Falkland Islands; not common.

Pol fusco-rubens, Hook fil et Harv

Pol antisogona, Hook fil et Harv

Pol microcarpa, Hook fil et Harv

Pol Sulivanæ, Hook fil et Harv

J.D.R. del. Fitch lith.

Reeve imp.

Dense cæspitosa. *Cæspites* 4–5 unc. longi, intricati. *Articuli* longitudine varii, inferiores valde elongati, supremi brevissimi, omnes striis sex rectis spiralibusve notati, e tubulis duodecim tenuibus coloratis circa cavitatem centralem dispositis conflata.

A fine species, and evidently quite distinct from any previously described; but unfortunately so tender that it cannot be removed from the paper without breaking; for which reason our description of the ramification is not so perfect as is desirable. It differs, in the substance especially, from the British *Polysiphonia atro-rubescens*, being more fragile and tender.

PLATE CLXXXII. *Fig.* II.—*A.* and *B.* different states of *P. anisogona*; 1, ramulus; 2, apex of ditto; 3, transverse section of ditto:—all *magnified*.

4. POLYSIPHONIA *tenuistriata*, Hook. fil. et Harv.; rubescens, articulata, multistriata, frondibus gracillimis capillaceis flaccidis elongatis circumscriptione ovato-lanceolatis, caule primario subsimplici flexuoso alterne irregulariter dichotome ramoso, ramis remotis circumscriptione ovatis ramulisque erecto-patentibus sensim attenuatis apice fibrillosis, axillis acutis, articulis ramorum diametro multiplo, ramulorum duplo triplove longioribus sex-striatis e tubulis duodecim tenuissimis radiantibus coloratis formatis, geniculis incrassatis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 266. (TAB. CLXXXII. Fig. III.)

HAB. Hermite Island, Cape Horn; dredged up in about six fathom water.

Basis frondis deest. *Caulis* primarius solitarius? 4–6 unc. longus, capillaris, flexuosus, alterne ramosus. *Rami* 2–3-unciales, ramulique tenuissimi.

A very elegant species, allied to *P. anisogona*, but much more slender, very differently branched, and not fragile when moistened after being once dried.

PLATE CLXXXIII. *Fig.* III.—1, plant of the natural size; 2, branch and ramulus; 3, ramulus; 4, transverse section of ditto:—*magnified*.

5. POLYSIPHONIA *Sulivanæ*, Hook. fil. et Harv.; pusilla, badia, articulata, flaccida, multistriata, frondibus flabellatim ramosis, ramis alterne decompositis fastigiatis, ramulis sparsis alternis subulatis simplicibus subquadrifariis, articulis ramorum diametro subduplo, ramulorum sesquilongioribus omnibus e tubulis duodecim angustis radiantibus formatis. (TAB. CLXXXII. Fig. IV.)

HAB. Falkland Islands; *Mrs. Capt. Sulivan.*

Radix? *Frondes* cæspitosæ, 1 unc. longæ, e basi valde fastigiatim ramosæ, flabellatim expansæ. *Caulis* primarius brevissimus, ramos plurimos capillares repetitim divisos fasciculatos emittens, rami penultimi subpectinati, ultimi curvati patentes, axillis obtusiusculis, supremi ramos ramulosque terminantes arcte incurvi sese inviciem amplectentes, spices frondium hinc nodosi v. incrassati apparent. *Color* badius. *Substantia* flaccida, tenax:—chartæ adhæret.

A pretty but small species, allied to the Auckland Islands *P. ceratoclada*, Mont., but slenderer; with the stem formed of a greater number of tubes, more flaccid, &c. The ultimate ramuli are longer in proportion than those they spring from, they are slender, patent, rather uniform in length, and curve upwards, hence giving a somewhat pectinated appearance to the ultimate divisions of the frond. The hue, which is pale brown in this specimen, may be somewhat faded, and here and there shows indications of the plant having been originally rose coloured.

PLATE CLXXXII. *Fig.* IV.—1, branch and ramuli; 2, apex of branch:—both *magnified*.

6. POLYSIPHONIA *microcarpa*, Hook. fil. et Harv.; atro-rubescens, cæspitosa, frondibus tenuissimis capillaribus membranaceis flaccidis tenacibus oligosiphoniis equalibus vix attenuatis irregulariter repetitim dichotomis, ramis ramulisque erecto-patentibus crebre divisis, articulis bistriatis e tubulis quatuor formatis, ramorum majorum diametro multiplo, minorum triplo quadruplove, ramulorum sesqui duplove longioribus,

ceramidiis pusillis ovatis breve pedicellatis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 265. (Tab. CLXXXII. Fig III.)

Hab. Hermite Island, Cape Horn; very rare.

Fil. 3–4 unc. longa, capillaria, flaccida, tenacia sed non fragilia, dense cæspitosa, basi irregulariter dichotome ramosa, ramis omnibus diametro æqualibus. *Ceramidia* minima, lateralia, elliptico-urceolata. *Color* luride ruber.

Plate CLXXXII. Fig. III.—1, portion of branch; 2, ditto with ceramidium:—both highly *magnified*.

7. Polysiphonia *abscissa*, Hook. fil. et Harv.; coccinea, frondibus circumscriptione ovatis tenuibus membranaceo-gelatinosis flaccidis tenacibus oligosiphoniis, caule primario parce diviso flexuoso ramos secundarios alternos multifidos circumscriptione obovatos emittente, ramis filiformibus minoribus alternis subdichotome divisis, ramulis fastigiatis (quasi abscissis) fibrilliferis, articulis ramorum diametro quadruplo v. sextuplo, ramulorum duplo triplove longioribus bistrintis, ceramidiis pusillis ovatis breviter pedicellatis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 266. (Tab. CLXXXIII. Fig. II.)

Hab. Hermite Island, Cape Horn; dredged up in about six fathom water.

Frons seu ramus primarius 3–4 unc. longus, filiformis v. capillaceus, flexuosus, alterne ramosus, ramis gradatim brevioribus, hinc circumscriptio frondis totius ovata ovadit. *Rami* inferne nudiusculi, superne fastigiatim ramulosi; ramulis ultimis tenuissimis, confertis. *Caulis* tubuli sub quatuor. *Color* roseus v. coccineus.

A beautiful species, of which the only specimens were procured with the dredge in St. Martin's Cove. The fastigiate branching of the ramuli and the colour are, of themselves, sufficient to distinguish this from the *P. microcarpa*, to which it is most nearly related. The principal stem is very conspicuous though slender, and the branching regular and tolerably uniform.

Plate CLXXXIII. *Fig.* II.—1, plant of the natural size; 2, branch and ramuli; 3, portion of ramulus; 4, portion of ramus; 5, ditto, with ceramidium:—all highly *magnified*.

8. Polysiphonia *flabelliformis*, Hook. fil et Harv.; pusilla, setacea, badia, rigidula, fronde brevi basi simplici stipitiformi apice flabellatim ramosa, ramis irregulariter dichotomis multifidis apice subfastigiatis, ramulis ultimis erectis longe nudis, axillis angustis, articulis multistriatis inferioribus diametro multiplo superioribus sesquilongioribus. Nobis *in Lond. Journ. Bot.* vol. iv. p. 266. (Tab. CLXXXIII. Fig. I.)

Hab. Crozet Islands; on *Macrocystis pyrifera*.

Frons uncialis, solitaria, rigida, crassitudine setæ porcinæ, inferne simplex, superne distiche flabellatim ramosa, crassiuscula, circumscriptione orbiculari. *Rami* multifidi, irregulariter dichotomi, fastigiati, ramulis erectis. *Articuli* rami valde elongati, striis numerosis notati. *Color* badius, vix rufescens:—chartæ vix adhæret.

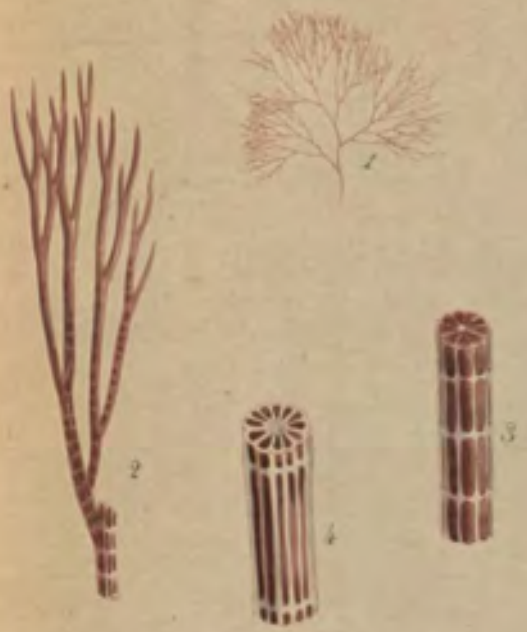
Only one specimen of this very distinct species was procured, from a piece of *Macrocystis* floating off the Crozet's Islands, of which group the present, the *Callithamnion Ptilota*, nob., and *Ballia Brunonis*, are the only known vegetable productions.

Plate CLXXXIII. *Fig.* III.—1, plant of the natural size; 2, branch and ramuli; 3, portion of ramulus, and 4, of stem:—highly *magnified*.

9. Polysiphonia (Heterosiphonia) *Berkeleyi*; Het. *Berkeleyi*, et Pol. *punicea*, Mont. *Voy. au Pole Sud, Bot. Crypt.* p. 128. t. 5. f. 3. *Fl. Antarct. Pt.* 1. p. 182.

Var. *β. Davisii*; robustior, caule primario regulariter ramoso, ramis erecto-patentibus sub-bipinnatim ramulosis, ultimis erectioribus densioribus parciusque divisis. P. Davisii, *nobis in Lond. Journ. Bot.* vol. i. p. 267.

I



P. flabelliformis, H.f. & H.

II

P. abscissa. H.f. & H.

III

P. tenuistriata, H.f. & H.

IV

Rhod. patula. H.f. & H.

Reeve imp.

Rhodomela Gaimardi Ag

Hab. Hermite Island, Cape Horn; Falkland Islands, and Kerguelen's Land; abundant. Var. *Davisii*, Hermite Island; rare.

The somewhat different habit, more regular primary ramification, and more erect, denser, and less divided ramuli, had induced us to separate the var. β. from the original *P. Berkeleyi*: an opinion we have now abandoned, after a careful examination of very many specimens; amongst which, forms connecting the two may be found.

Though not included by Montagne under his genus *Heterosiphonia*, the structure of the tubes forming the frond of *P. pumicea* is the same with that of *Heterosiphonia Berkeleyi*, of which we have examined an authentic specimen, communicated by our friend the Rev. M. J. Berkeley, and differing in no respect from *P. pumicea*. We scarcely, however, think that the varying diameter of the tubes in the genus *Polysiphonia* authorizes a division of the genus; for, in some species, as the present, the increased size of two of the tubes, though conspicuous under favourable circumstances, affords but an obscure character; and in some species the difference of diameter is trifling.

24. RHODOMELA, *Ag.*

1. Rhodomela *patula*, Hook. fil. et Harv.; fronde cylindracea brunnea cellulis irregularibus notata vage bipinnatim ramosa, ramis alternis elongatis horizontalibus suberecto-patentibusve minoribus elongatis patentibus subsimplicibus alternatis nudis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 264. (Tab. CLXXXIII. Fig. IV.)

Hab. Falkland Islands; Port William and Berkeley Sound, rare.

Frons 4–6 unc. longa, basi diametro ¼ lin., vage et patentim ramosa. *Caulis* primarius subsimplex, ramos alternos, patentes, elongatos emittens. *Rami* laxe ramulosi, ultimi brevisculi, e tubulis 4 magnis circa cavitatem centralem dispositis extus strato cellulorum confertorum circumdatis conflati. *Substantia* membranacea. *Color* lurido brunneus v. fuliginosus:—chartæ adheret.

Similar to the following, and, perhaps, not specifically distinct: it differs in the ramification; and in the absence of the very numerous short ultimate ramuli so copiously scattered over the branches of *R. Gaimardi*.

Plate CLXXXIII.—*Fig.* IV.—1, portion of plant of the natural size; 2, portion of stem and ramulus:—*magnified*.

2. Rhodomela *Gaimardi*, Ag.; fronde cylindracea flabellatim ramosissima, stipite simplici filiformi, ramis primariis divaricatis, secundariis patentibus bipinnatim multifidis segmentis alternis, ramulis brevibus setaceis simplicibus furcatis quadrifidisve sæpe secundis per totam frondem sparsis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 264. *Agardh, Spec. Alg.* vol. iv. p. 380. (*non Mont. in Voy. au Pole Sud*). (Tab. CLXXXIV.)

Hab. Hermite Island, Cape Horn, and in Berkeley Sound, Falkland Islands; not uncommon.

Frons 4–6 unc. longa, crassitudine setæ porcinæ, basi simplex, superne in ramos 3–4 primarios flabellatim divisa. *Rami* primarii subdichotomi v. irregulares, divaricati, repetitim bifarie ramulosi; rami secundarii tertiariique elongati, simpliciusculi, filiformes, *ramulis brevibus* ornati. *Ramuli* 2–3 lin. longi, sæpissime secundi, tenuissimi. *Structura* ut in *R. patula*. *Color* luridus.

This, which we doubtfully referred in the London Journal of Botany to the *R. Gaimardi*, Ag., appears to us decidedly the plant of Agardh; and our friend, Dr. Montagne, has kindly furnished us with a specimen of the Auckland Island species, to which he had applied this name, and which belongs to another plant. The *R. Gaimardi* of Dr. Montagne is assuredly our *Polysiphonia botryocarpa*, (Pt. 1. p. 181.) and has very much the appearance of a *Rhodomela*. The specimens, from which the above description is taken, were gathered in the same locality as that from whence the typical plant of Agardh was brought by Gaudichaud; and they agree with

the description of that author in every particular: except that the compression attributed to the frond is certainly not a character of our specimen, and most probably originated in that of Gaudichaud from bad drying.

PLATE CLXXXIV.—Two states of *R. Gaimardi*, of the natural size. *Fig.* 1, ramuli and stichidia; *fg.* 2, tetraspores; *fig.* 3, section of stem:—*magnified*.

8. RHODOMELA? *comosa*, Hook. fil. et Harv.; ramosissima, atro-rubescens, caule cylindraceo frondem percurrente ramis crebris alternis ornato, ramis cylindraceis elongatis pluries alterne divisis erecto-patentibus sensim utrinque attenuatis, ramulis ultimis setaceis acutis abbreviatis vagis, capsulis ovatis breve pedicellatis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 263. Harv. *Ner. Aust.* t. xi. (TAB. CLXXXV.)

Var. *β. fibrilliféra*; fronde tenuiori laxius ramosa, apicibus fibrilliferis.

HAB. Berkeley Sound, Falkland Islands; both varieties abundant.

Caulis cylindraceus, 6–9 unc. longus, 1–1½ lin. diametro (in var. *β* gracilis) individuus v. e basi in ramos primarios 3–4-divisus. *Rami* primarii secundariis perplurimis aucti, secundarii ramulis brevibus setaceis ornati, ultimis in var. *β.* fibrilliferis: omnes e tubulis septem circa axin centralem articulatam dispositis et strato externo cellulorum densorum circumdatis conflati. *Ceramidia* numerosa, secus ramulos ultimos tertiariosque disposita, parva, ovata, breviter pedicellata. *Substantia* flaccida, opaca, primo visu inarticulata, sed vere articulata. *Color* luride rufo-brunneus:—chartæ arcte adhæret.

A very much branched species, variable in size and in the density of the ramification. In old specimens the stem becomes considerably incrassated and constricted at irregular intervals. Being unacquainted with the secondary fructification, we doubtfully refer this plant to *Rhodomela*: it may belong to *Dasya*.

PLATE CLXXXV.—Two vars. of *R. ? comosa*, of the natural size. *Fig.* 1 *a*, branch and ramuli of var. *α*; *fg.* 2 *a*, section of ditto; *fig.* 3 *a*, tissue of ditto; *fig.* 1 *b*, portion of branch and ramulus of var. *β.* with ceramidia; *fg.* 2 *b*, fibrilliferous apex of ditto:—highly *magnified*.

25. MELOBESIA, *Lamx.*

1. MELOBESIA *verrucata*, Lamx. *Polyp. flexibles*, p. 315. *Decaisne in Ann. Sc. Nat.* Ser. ii. vol. xviii. p. 126.

Var. *Antarctica*; fronde circumscriptione orbiculari lobata medio adnata margine integerrima libera superficie levi lineis concentricis undulata, ceramidiis depresso-hemisphæricis:—an species distincta?

HAB. Var. *β.* Hermite Island, Cape Horn; the Falkland Islands, and Kerguelen's Land; encrusting shells, and the stems of *Algæ*, particularly of *Ballia Brunonis*.

The *M. verrucata* is a native of the Atlantic Ocean and Mediterranean Sea; the var. *β. of* the Antarctic Ocean; of Lord Auckland's Group, New Zealand and Tasmania. The ceramidia are intermediate in size between those of *M. verrucata* and *M. pustulata*, Lamx. We have little doubt of this being a new species; but the materials for its determination are wanting.

26. DASYA, *Ag.*

1. DASYA *pectinata*, Hook. fil. et Harv.; setacea, rigida, purpurea, fronde basi nuda superne distiche decomposito-pinnata, ramis articulatis tri-striatis pectinato-pinnatis, ramulis (v. pinnulis) simplicibus alternis brevibus subulatis articulatis monosiphoniis, articulis diametro sesquilongioribus, ceramidiis urceolatis pedicellatis. Polysiphonia pectinata, *nobis in Lond. Journ. Bot.* v. iv. p. 267.

Rhodomela comosa Hook. Bot. Harv.

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Stictosiphonia, vaga, H. f. & H.

Stictosiphonia, Hookeri, Harv.

J.D.H. & W.F. del.

Printed by Reeve Brothers

Hab. Hermite Island, Cape Horn; dredged up from about six fathom water, and on rocks at low-water mark, very rare; Falkland Islands, *Mrs. Capt. Sulivan.*

Species pulcherrima, habitu *Bonnemaisoniæ asparagoidis*. *Frons* 2–4 unc. longa, circumscriptione late ovata, 2 unc. lata, rigida, disticho ramosa, v. ramosissima, ramis setaceis decomposito-pinnatis. *Caulis* primarius simplicius-culus, basi *inarticulatus*, superne articulatus, tri-striatus, compressus v. angulatus. *Rami* minores ramulis alternis ornati, omnes breves, subulati, e singulo serie cellularum formati, hinc monosiphonii. *Articuli* omnes breves, cellini e tubis quatuor inæqualibus (quorum 2 lateralibus latioribus,) circa cavitatem centralem dispositis conflati; *articuli* ramulorum *Callithamnio* forma et structura simillimi. *Ceramidia* secus ramulos disposita. *Color* pulchre purpureo-roseus.

A very beautiful and rare species: distinct from any of its European and exotic congeners that have been described. Mrs. Sulivan's specimens are much finer and more branched than those from Cape Horn.

27. STICTOSIPHONIA, *Harv.*

Frons purpurea, filiformis, cylindracea, ramosa, tubulosa, extus stictis quadratis notata, intus diaphragmatibus septata. *Peripheria* e cellulis quadratis tubum centralem cavum radiatim cingentibus formata. *Ceramidia* ? *Stichidia* lanceolata, ramulos terminantia, tetrasporas pluriseriatas foventia.—Algæ *pusillæ, cæspitosæ, e filis repentibus ortæ, rupes marinas* Antillanas, Austro-Atlanticas, Antarcticasque *viæ demersas v. ad limitem pleni maris æstus vitas incolentes.*— Genus *Bostrychiæ*, Mont. valde affine.

A very natural little group: composed of a few species, which occupy the same position with regard to the high-water mark in the Southern Ocean, that *Lichina* and *Catenella* do in the Northern. As a genus it differs from *Bostrychia*, Mont., only in the more simple internal structure of the frond, and broad, apparently septate, tubes, surrounded by only one row of cells occupying the centre of the frond: in habit and other respects they are so closely allied, that it is doubtful whether *Stictosiphonia* should not rather be regarded as a subgenus of *Bostrychia*. The structure of the frond is very similar to that of *Polysiphonia*, differing chiefly in the cellules of the periphery being very short; whilst those constituting the axis are lengthened.

1. Stictosiphonia *Hookeri*, Harv.; caulibus indivisis curvatis apice involutis, ramis lateralibus abbreviatis alternis subquadrifariis erecto-patentibus, inferioribus subulatis simplicibus furcatisve, superioribus alterne multifidis, *ramulis subulatis acutis* erectis, axillis acutis, stictis subtriseriatis, stichidiis lanceolatis acutis ramulos minores terminantibus. Bostrychia Hookeri, Harvey *in Lond. Journ. Bot.* vol. iv. p. 269. (Tab. CLXXXVI. Fig. II.)

Hab. Hermite Island, Cape Horn; and the Falkland Islands: on rocks close to high-water mark; abundant.

Frons 1–1½ unc. longa, dense cæspitosa, rigida, atro-purpurea. *Caulis* plerumque simplex, per totam longitudinem ramulis brevibus lateralibus ornatus. *Rami* nunc omnes 1 lin. longi et indivisi v. superiores elongati 2–4 lin. longi, repetitim ramosi. *Ramuli* ultimi subulati, erecti erecto-patentesve. *Rami ramulique* omnes apicibus plerumque arcte involutis:—chartæ laxe adhæret.

A beautiful little plant, marked all over, under the microscope, with three rows of dark purple dot-like cells.

Plate CLXXXVI. *Fig.* II.—1, plant of the natural size; 2, stem, &c.; 3, ramulus and stichidium; 4, portion of stem; 5, longitudinal and 6, horizontal section of ditto; 7, tetraspores:—all *magnified*.

2. Stictosiphonia *fastigiata*, Hook. fil. et Harv.; caulibus fastigiatis multifidis apicibus involutis,

ramis æquilongis curvatis, ramulis alternis subulatis furcatis v. alterne multifidis, axillis acutis, stictis 3–4- v. pluriseriatis. Bostrychia fastigiata, *nobis in Lond. Journ. Bot.* vol. iv. p. 269.

Hab. Hermite Island, Cape Horn; on stones near high-water mark.

Pusilla, dense fastigiata. *Frondes* ½ unc. longæ, e basi in ramos plurimos primarios divisæ, rubro-purpureæ. *Caulis* brevissimus. *Rami* elongati, curvati, apicibus arcte incurvis, ramulis simplicibus multifidisve ornati:—chartæ laxe adhæret.

Possibly only a variety of the preceding; from which, however, it differs conspicuously in the very abbreviated stem, the consequently longer, more divided branches and the duller colour.

3. Stictosiphonia *vaga*, Hook. fil. et Harv.; caulibus flexuosis vage dichotome ramosis, ramis paucis nudis simplicibus filiformibus subcapillaribus arcuatis medio incrassatis apicibus incurvis, ramulis nullis, axillis patentibus, stictis minutis multiseriatis, stichidiis longissime pedunculatis lanceolatis acutis. Bostrychia vaga, *nobis in Lond. Journ. Bot.* vol. iv. p. 270. (Tab. CLXXXVI. Fig. I.)

Hab. Christmas Harbour, Kerguelen's Land; on rocks and stones above high-water mark, and in damp places at a considerable distance from the sea; abundant.

Dense cæspitosa, filis intertextis quasi crinita. *Frondes* ½–1 unc. longæ, flexuosæ, irregulariter ramosæ, capillares. *Sticiæ* parvæ, 6–8-seriatæ. *Substantia* rigida. *Color* luride purpureus:—chartæ laxe adhæret.

A remarkably distinct little species, of very simple structure. It is abundant in Kerguelen's Land, sometimes inhabiting places some hundreds of feet above the sea, but probably always within reach of the spray.

Plate CLXXXVI. *Fig.* I.—Plant of the natural size; 2, rami of ditto; 3, portion of ditto; 4, incrassated ramulus; 5, ramulus and stichidium; 6. tetraspores:—all *magnified*.

28. LAURENCIA, *Lamx.*

1. Laurencia *pinnatifida*, Lamx. *Var.* γ. *angustata*, Hook.; *Fl. Antarct.* Pt. 1. p. 184.

Hab. Berkeley Sound, Falkland Islands; abundant on the beach.

One of the most widely dispersed of the *Algæ*, inhabiting the shores of Europe from Norway to the Mediterranean; the Canary Islands; west coast of Africa, and Cape of Good Hope; the Peninsula of India; Australia and New Zealand; the Pacific Islands, and both coasts of North and South America. This very extended range has, however, its limits; the plant is neither found so far north as Iceland in the Arctic Sea, nor in the south is it known to inhabit Cape Horn or Kerguelen's Land.

29. DELISEA, *Mont.*

1. Delisea *pulchra*, Mont. *in Ann. Sc. Nat. Ser.* iii. vol. i. p. 158. Bowiesia pulchra, *Grev. Synops. Alg.* p. 57. Bonnemaisonia elegans, *Endl. Suppl.* vol. iii. p. 44. Calocladia pulchra, *Grev. Herb.* Sphærococcus flaccidus, *Suhr.* (*fid. Mont.*)

Hab. Christmas Harbour, Kerguelen's Land; common.

Magnificent specimens of this noble *Alga* were collected by the Antarctic Expedition, though only in Kerguelen's Land. The previously assigned habitat for the species is New Holland or Tasmania; but we have seen no other specimens than Mr. Fraser's original one, labelled as from that quarter of the world. It therefore appears to us probable, that the specimen sent by Mr. Fraser, may have been collected in Mc'Quarrie's Island; whence other Antarctic plants were brought to that gentleman in Sydney, some of which have since found their way into our Herbaria as of Australian origin.

30. IRIDÆA, *Bory.*

1. IRIDÆA *Radula*, Bory; *Fl. Antarct.* Pt. 1. p. 188.

HAB. Hermite Island, Cape Horn; Falkland Islands and Kerguelen's Land, very abundant. Cockburn Island; at the limits of southern vegetation, on the beach, rare and bleached.

So abundant are the *Irideæ* in the South Polar Ocean, and so variable in their form and texture, that we can scarcely hope to arrive at any accurate knowledge of the species until they shall have been studied in a living state; and then it is not improbable that the genus will be considerably reduced; and one or two of the more common species be found to assume forms as dissimilar as those of our *Laurencia pinnatifida*.

There exist in the Hookerian Herbarium, authentic specimens of the *Fucus bracteatus* of Gmelin, as figured in Turner's 'Historia,' collected both at the Cape of Good Hope and in North West America, by Mr. Menzies. These are (as is generally the case with the specimens of the larger *Fuci*, preserved in our Herbaria) smaller and of that lanceolate form which other *Irideæ* present in a young state. Their texture is very thick, densely cartilaginous, opaque; and covered with tubercles which fall away, leaving a cribriform frond both when immature and older. This great density is a very remarkable character, and observable in the plant here referred to that species, which, when full grown, becomes broadly ovate, or orbicular, and cordate or rounded, or narrowed at the base; with the lamina more or less and variously divided, sometimes three feet broad, or upwards. The largest specimens we have never seen attached, though they are abundant, washed up on the beach, and probably attain their great size on the outer rocks.

Since the publication of the first part of this work, we have, through Dr. Montagne's kindness, had the opportunity of inspecting the *I. laminarioides*, Bory, of Lord Auckland's Group: specimens of which are in our Herbarium from the same island; but which we had previously regarded as a more delicate state of *I. Radula*. Even what we consider the true *I. Radula* of Lord Auckland's Group and Kerguelen's Land, is not so dense in the frond as the specimens of the Falkland Islands and Cape of Good Hope are. Both this and the following species have the surface frequently covered with granules, tubercles or pediculate pear-shaped organs; or in the young state with elongated fleshy bodies similar to those of the *I. stiriata*, Bory. The *I. stiriata*, according to the descriptions, may belong to a state of this, or the following, or many other forms of the genus: it is, however, a narrower, smaller species, with a much more dense frond than even *I. Radula*.

2. IRIDÆA *cordata*, Bory, *in Duperrey Voy. Bot.* p. 104; *et* I. micans, p. 110. t. 13 et 13 *bis*. Halymenia cordata, *Agardh, Sp. Alg.* p. 201. Fucus cordatus, *Turner Hist. Fuc. t.* 116.

Var. β. *ciliolata*; stipite brevi cartilagineo cuneato ciliato-dentato mox in frondem simplicem ovato-lanceolatam desinente, fronde latissima basi cuneata v. cordata apice obtusa v. acuta v. emarginato-bifida membranacea rubra plana nitente levi margine vix undulata. Nobis *in Lond. Journ. Bot.* vol. iv. p. 263.

Var. γ. *dichotoma*; stipite brevi mox cuneato furcato v. pluries dichotomo sensim in frondem late cuneatam obovatamve desinente, segmentis integris vel divisis margine dentatis lobatis prolifersve.

HAB. Hermite Island, Cape Horn, and the Falkland Islands; both varieties very abundant.

This species, when fresh, well deserves the brilliant description of its beautiful tints, given by M. Bory on the authority of Admiral D'Urville and M. Gaudichaud. It is one of the most common *Algæ* of the southern extremity of America and the Falklands. In its younger state, the fronds are obovate or spathulate, like those of *I. laminarioides*, figured by Bory, and soon expand into laminæ, variously modified, according to situation and exposure, with relation to the force of the sea, the nature of the bottom, the currents, depth, and protection afforded by other *Algæ*; for no two fronds of a similar shape are usually to be found within a few yards. Indeed,

I question whether *I. micans* be more than a membranous form of *I. Radula*: the former always preferring the quieter harbours, where its fronds are sometimes as thin as those of a *Delesseria*, quite unfitted to withstand the rough seas of the outer coasts, which wash the almost uninjured fronds of the *I. Radula* ashore in broad sheets, as large and as red as an ordinary pocket-handkerchief.

Though sometimes almost equally thin, the substance of the *I. micans* is never so membranous as that of a *Delesseria*. The colour, though not so bright a rose, or so delicate when the plant is dried, is, when seen in the living state, much more varied and more beautiful. The texture is such that the slightest motion of the water causes the frond to undulate throughout from the base upwards without falling into folds: each portion of the surface, when presented at a certain angle to the eye, reflecting back the most brilliant metallic tints of azure, steel-blue, pink, and purple. A more beautiful object in the water is not to be found in the whole order of *Algæ* than this, when seen from a boat in calm weather and sunshine; though it is seldom that such opportunities occur in the latitudes it inhabits. I have not been able to detect any striæ on the surface of the frond, which is formed of cells so densely packed that they coalesce into a homogeneous cartilaginous tissue.

We have no hesitation in pronouncing this as identical specifically with the *I. cordata* of the Banks of Newfoundland and the Cape of Good Hope; of which species there is an excellent figure in the 'Historia Fucorum', coinciding with that of Bory in Duperrey's Voyage. The descriptions, both of Agardh and Turner, particularly mention the iridescence of their specimens. The only differential characters noted by Bory, who justly indicates the close affinity of *I. micans* with *I. cordata*, are the slight discrepancy in the bluntness of the apices of the fronds and depth of the lobes at the cordate base. We are, however, well assured that such characters are all too slight; for we could not, either at the Cape of Good Hope or the Falkland Islands, distinguish between the forms of this *Iridæa* with a cordate and those with a cuneate base to the frond. We are, however, far from asserting that there may not be from the two last-named localities two species here confounded (one of which, the *I. micans* of Bory, is the same with the *F. cordatus* of Turner), though we strongly incline to the opposite opinion.

31. PHYLLOPHORA, *Grev.*

1. PHYLLOPHORA *cuneifolia*, Hook. fil. et Harv.; fronde stipitata basi ramosa lato-cuneata prolifera integra emarginata v. biloba e margine disco v. apice frondes consimiles emittente.

HAB. Port William and St. Salvador Bay, Falkland Islands; Christmas Harbour, Kerguelen's Land; rare.

Frondes omnes stipitatæ. *Stipes* compressus interdum subplanus, ima basi plerumque angustissimo, sensim in laminam latam cuneatam deltoideamve dilatatus, basi divaricatim ramosus, bis, ter pluriesve *divisus*. *Frondes* primariæ 1–2 unc. longæ, 1–1½ latæ; apice latiore late rotundato, emarginato, retuso v. bilobo; segmentis rotundatis, rarius erosis; secundariæ primariis omnino similes sed colore pallidiores et basi simplices, sæpe frondes tertiarias emittentes, hinc planta vetusta catenatim ramosa evadit. *Fructus* —— ? *Substantia* tenuiter cartilaginea, subcornea, basi opaca. *Color* ut *P. Brodiæi*.—Chartæ vix adhæret.

Certainly distinct from *P. obtusa*, the only one of the genus hitherto described as a native of the southern temperate hemisphere, but perhaps not equally so from *P. Brodiæi*. Still our specimens are very different from the ordinary British form of that plant, in the much shorter stipes, and larger broader frond, which is much less lobed and the lobes are not so narrow or elongated, or separated by so deep a sinus.

2. PHYLLOPHORA *obtusa*, Grev. *Fl. Antarct.* Pt. 1. p. 187.

HAB. Hermite Island, Cape Horn; dredged up from five fathom water, very rare.

The specimens of this species are sufficiently characteristic, though few in number. It is also a native of the Cape of Good Hope and Lord Auckland's Group.

Ptilota Harveyi Hook.fil.

32. NOTHOGENIA, *Mont.*

1. Nothogenia *variolosa*, Mont. *Fl. Antarct.* Pt. 1. p. 188.

Hab. Hermite Island, Cape Horn; the Falkland Islands; and Christmas Harbour, Kerguelen's Land; on rocks, very abundant.

An exceedingly variable plant in size and in the breadth of its fronds, simulating in the high southern latitudes the *Chondrus crispus*, as far as locality and abundance are concerned. The southern species representing our *Chondrus crispus* is the *C. tuberculatus* in Lord Auckland's Group, (where the *Nothogenia* also abounds,) and at the Cape of Good Hope the *C. dilatatus*.

33. DUMONTIA, *Lamx.*

1. Dumontia *filiformis*, Grev. *Fl. Antarct.* Pt. 1. p. 189.

Hab. Berkeley Sound, Falkland Islands; rare.

Apparently identical with the European plant, which ranges from the Mediterranean to the British coasts.

34. GIGARTINA, *Lamx.*

1. Gigartina *plicata*, Grev. *Alg. Brit.* p. 15. Fucus plicatus, *Engl. Bot.* t. 1089.

Hab. Cape Pembroke, Falkland Islands; Christmas Harbour, Kerguelen's Land; abundant.

These examples so entirely accord with others of British growth, that it is unnecessary to separate them specifically. No specimens considered by any systematic botanist to belong to this *Gigartina* have been found between the latitudes of the south of Europe and Kerguelen's Land, except (according to Montagne) at Callao: yet the genus, under one or other of its Protean aspects, abounds throughout all tropical and temperate seas.

35. PTILOTA, *Ag.*

1. Ptilota *Harveyi*, Hook. fil.; caule compresso cartilagineo inarticulato anguste lineari furcato inordinatève ramosissimo, ramis distichis pinnatim decomposito-ramosis majoribus minoribusque pectinatim pinnulatis costa articulata percursis, pinnulis creberrimis simplicibus articulatis monosiphoniis abbreviatis subulatis oppositis, pinnularum articulis quadratis, favellis in ramulos terminalibus ramellis pinnatis involucratis, tetrasporis ad apices pinnularum aggregatis nudis breve pedicellatis. Hook. fil. *in Lond. Journ. Bot.* vol. iv. p. 271. (Tab. CLXXXVII.)

Var. β. pinnulis subdistantibus.

Hab. Hermite Island, Cape Horn, and on the outer coasts of the Falkland Islands; abundant.

Species pulcherrima, prima visu *P. plumosæ* referenda, sed distinctissima. *Frons* 8 unc. ad pedalem, e ramis patulis ejusdem latitudinis. *Stipes* gracilis, ½ lin. diametro, et per totam frondem æquilatus, irregulariter furcatim v. dichotome v. sub-pinnatim ramosissimus. *Rami* minores majoresque (juniores præcipue) ramulis creberrimis articulatis 1 lin. longis pulcherrime pectinati. *Ramuli* simplices, serie unica cellularum quadratarum endochromate roseo repletarum constantes, ramis *Callithamnio* subsimiles.

This lovely plant is the Cape Horn and Falkland Island representative of the Boreal and Arctic *P. sericea*, Harv. (*P. elegans*, Kutz., *Fucus sericeus*, Gmel.) and of the Auckland Island *P. formosissima*, (t. LXXVII.) From

the former of these it differs in being larger, more rigid, and having ramuli of much greater diameter, so that under the microscope it is impossible to confound them. Its Cape of Good Hope representative, and indeed, very near ally, is the *P. setigera*, Harv. (Ncreis Australis.)

PLATE CLXXXVII.—*Fig.* 1, branch and ramuli; *fig.* 2, portion of a ramulus; *fig.* 3, another ramulus; *fig.* 4, favella; *fig.* 5, spores from ditto; *fig.* 6, tetraspores:—all *magnified*.

36. CERAMIUM, *Adans.*

1. CERAMIUM *rubrum*, Ag. *Fl. Antarct.* Pt. 1. p. 191.

HAB. Hermite Island, Cape Horn; Falkland Islands, and Christmas Harbour, Kerguelen's Land; very abundant.

These two *Ceramia* (*rubrum* and *diaphanum*) are very widely distributed throughout the temperate regions of both hemispheres: they are also found on the shores of Peru and Brazil.

2. CERAMIUM *diaphanum*, Ag. *Fl. Antarct.* Pt. 1. p. 191.

HAB. Hermite Island, Cape Horn; Falkland Islands; and Christmas Harbour, Kerguelen's Land; abundant.

37. GRIFFITHSIA, *Ag.*

1. GRIFFITHSIA *Antarctica*, Hook. fil. et Harv.; filis cæspitosis dichotome ramosis flaccidis, axillis inferioribus patentibus, superioribus acutis, ramis elongatis ramulisque nudis ad nodos constrictis, articulis cylindraceis superne paulo incrassatis, ramorum diametro sextuplo, ramulorum subtriplo longioribus;—fructificatio deest.

HAB. Hermite Island, Cape Horn, and the Falkland Islands; on rocks.

Fila sub 3 unc. longa, fastigiata, parce ramosa, ramis elongatis, distanter ramulosis, ramulis brevibus. *Color* roseus:—chartæ arcte adhæret.

Allied to the *G. secundiflora*, J. Ag., but smaller in all its parts.

2. GRIFFITHSIA *corallina*, Ag. Conf. corallina, *Engl. Bot.* t. 1815.

HAB. Hermite Island, Cape Horn; dredged up in about seven fathom water.

A solitary barren specimen, resembling the British *G. corallina*, which is also a native of the Mediterranean Sea, Canary Islands, and Cape of Good Hope.

3. GRIFFITHSIA *equisetifolia*, Ag. Conf. equisetifolia, *Engl. Bot.* t. 1479.

HAB. Falkland Islands; (*Agardh.*)

38. BALLIA, *Harv.*

1. BALLIA *Brunonis*, Harv. *Fl. Antarct.* Pt. 1. p. 190.

Var. β. *Hombroniana*, Fl. Antarct. l. c.

HAB. Hermite Island, Cape Horn; Falkland Islands; Christmas Harour, Kerguelen's Land, and the Crozet Islands; most abundant; always (?) parasitical.

One of the handsomest, and certainly the most common and widely distributed of the Antarctic *Florideæ*: its northern limit in the New World is Patagonia, and the Bay of Islands in New Zealand in the Old. With regard to the adoption of the trivial appellation of "*Callitricha*," which Agardh proposed for this species (under *Sphacelaria*), it was waived in compliance with the wish of the first discover of the plant, whose name it now bears.

Cal. Pulota. H.f. & H.

Cal. ternifolium. H.f. & H.

Cal. scoparium. H.f. & H.

39. CALLITHAMNION, *Lyngb.*

1. CALLITHAMNION *Plumula*, Agardh, *Sp. Alg.* vol. ii. p. 159.

HAB. Hermite Island, Cape Horn; dredged up from about seven fathom water; very rare.

Decidedly the same as the European and North American plant.

2. CALLITHAMNION *simile*, Hook. fil. et Harv.; fronde subsolitaria rigidiuscula ramosissima, ramis alternis v. subdichotomis articulatis enerviis, ramulis brevissimis oppositis distichis crassis sursum pectinatis e quoque ramorum articulo horizontaliter porrectis, pinnulis robustis simplicibus ramosisve, articulis ramorum diametro sesqui-duplo longioribus, ramulorum diametrum subæquantibus.

HAB. Christmas Harbour, Kerguelen's Land; rare.

Frons 2–5 unc. longa, gracilis, rigidiuscula, repetitim distiche ramosa; ramis omnibus articulatis, æquilatis. *Ramuli* ½ lin. longi, distiche oppositi, e medio articuli cujusvis per totam frondis longitudinem orti, robusti, subacuti, horizontaliter patentes, secus marginem superiorem dispositi, ramulis secundariis obsiti. *Color* fusco-ruber.

C. Plumulæ simillimum, sed rigidiusculum, ramis latioribus, ramulis robustioribus articulisque brevioribus.

This so closely resembles the *C. Plumula*, that it is difficult by mere words to discriminate them; yet, on comparing them under the microscope, they are obviously distinct. *C. simile* is a much coarser and more rigid plant, with the ramuli more robust in proportion to the diameter of the articulation they spring from, and the articulations themselves are shorter. Again, from the circumstance of the true *C. Plumula* occurring at Cape Horn, where this, (the only Kerguelen's Land species), does not appear, we incline to regard the present as a representative species rather than a variety.

3. CALLITHAMNION *Ptilota*, Hook. fil. et Harv.; parvum, rigidulum, setaceum, fronde pinnatim ramosissima, ramis vix distichis venoso-striatis subopacis, secundariis opposite pinnulatis, pinnulis simplicibus patentibus subulatis e quoque ramorum articulo ortis, articulis diametro duplo longioribus. Nobis *in Lond. Journ. Bot.* vol. iv. p. 272. (TAB. CLXXXIX. Fig. I.)

HAB. Crozet Islands; on a floating mass of *Macrocystis pyrifera*.

Frons 1–2 unc. longa. *Caulis* crassitudine setæ equinæ, repetitim pinnatim ramosus; ramis subdistichis patentibus demum deflexis, inferioribus subuncialibus; secundariis breviusculis pinnatis, pinnis plurimis densis, oppositis, simplicibus, subulatis, e omni articulo rami ortis. *Color* fusco-ruber:—chartæ vix adhæret.

Only one specimen of this very distinct little species was found: it grew on a piece of floating sea-weed, picked up at a considerable distance from the shore.

PLATE CLXXXIX. *Fig.* I.—1, plant of the natural size; 2, ramuli; 3, ditto with sphærospores:—all *magnified*.

4. CALLITHAMNION *ternifolium*, Hook. fil. et Harv.; perpusillum, vage dichotome ramosum, ramis pellucide articulatis, ramulis sæpissime ternis e omni ramorum articulo ortis erecto-patentibus brevibus gracilibus simplicibus, articulis ramorum diametro 4–5-plo ramulorum subduplo longioribus, favellis magnis bilobis ramos terminantibus. Nobis *in Lond. Journ. Bot.* vol. iv. p. 272. (TAB. CLXXXIX. Fig. II.)

HAB. Hermite Island, Cape Horn; dredged up from about eight fathom water; parasitic on other *Algæ*.

Species perpusilla, parasitica, cæspitosa, sub ½ unc. longa, vage ramosa, rosea, flaccida et membranacea. *Ramuli* plerumque e quoque articulo terni, raro bini quaternive, graciles, breves, simplices. *Articuli* caulis ramorumque elongati. *Favellæ* magnæ.

A very small plant, of which but few specimens were obtained, and by the dredge only: they are in a good state of fruit, and probably characteristic of the species.

PLATE CLXXXIX. *Fig.* II.—1, plant of the natural size; 2, portion of ditto; 3, ramuli; 4, ditto, with favella; 5, tetraspores:—*magnified*.

5. CALLITHAMNION *flaccidum*, Hook. fil. et Harv.; gracillimum, flaccidum, membranaceum, fronde laxe et vage decomposite ramosa, ramis primariis et secundariis oppositis alternisve distichis elongatis patentibus, ramulis ultimis brevibus simplicibus patentibus oppositis secundisve apice incurvis, articulis ramorum primariorum diametro multoties secundariorum 6–10-plo ramulorum sesquilongioribus pellucide roseis enerviis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 278. (TAB. CLXXXVIII. Fig. I.)

Var. *β. alternifolium*; ramis ramulisque alternis secundisve rarissime paucis oppositis.

HAB. Hermite Island, Cape Horn; dredged up from about seven fathom water; abundant.

Frons 2–4 unc. longa, laxe ramosa, membranacea, flaccida, rosea. *Caules ramique* gracillimi, filiformes.

A very beautiful and delicate species, remarkable for the ramification being often truly opposite, always so in var. *α*, two branches springing from opposite points of the same articulation. On the other hand, when, as in var. *β*. they are alternate or secund, it is owing to the inner ramuli on the branches becoming abortive, those along the outer edge alone being developed. There is no other difference between the two varieties. Specifically the present is most closely allied to the *C. Turneri*, but it is much larger and more branching. The colour is a very bright rose, and from the delicacy of the filaments, the plant forms a beautiful object when properly displayed upon paper. The articuli of the stem are often singularly elongated.

PLATE CLXXXVIII. *Fig.* I.—1, plant of the natural size; 2, ramus and ramuli; 3, apex of ramulus; 4, favella:—*magnified*.

6. CALLITHAMNION *scoparium*, Hook. fil. et Harv.; cæspitosum, caulibus fastigiatis, primario crasso inarticulato fibris intertextis flexuosis stuposis vestito flabellatim ramoso, ramis primariis cauli similibus, secundariis strictis gracilibus pellucidis creberrime pinnatis bipinnatisve quadrifariis e primariorum apicibus fasciculatim ortis fastigiatis, articulis diametro duplo triplo longioribus. Nobis *in Lond. Journ. Bot.* vol. iv. p. 178. (TAB. CLXXXIX. Fig. III.)

Var. *β. ramulosum*; pinnis apice ramulis secundis ornatis.

HAB. Var. *α* Berkeley Sound, Falkland Islands; on rocks. Var. *β*. Hermite Island, Cape Horn; rare.

Frons 2–3 unc. longa, dense fastigiata. *Caules* robusti, inarticulati, basi integra, fibris stuposis dense vestiti, in discum latiusculum expansi. *Rami* cauli subsimiles, per totam longitudinem ramulis strictis dense fastigiatis quadrifariis vestiti (ut in *Sphacelaria scoparia*); secundarii articulati, vage ramosi, pinnati v. dichotomi secundive; omnes erecti, ramulique plerumque appressi; apicibus obtusis v. acutis simplicibus v. ramulis brevibus pectinatis ornati. *Substantia* rigida. *Color* luride purpureus.

A densely tufted species, with the habit of *Sphacelaria scoparia*, resembling amongst its congeners the *C. tetricum* of Britain, but abundantly different under the microscope. It has also been found in Tasmania.

PLATE CLXXXIX. *Fig.* III.—1, plant of the natural size; 2, ramus and ramuli; 3, apex of the latter; 4, fibres at the base of the stem:—*magnified*.

7. CALLITHAMNION *Montagnei*, Hook. fil.; fronde fruticosa ramosissima, caulibus primariis decompositis sensim alternatis crassis quadrifariis inarticulatis opacis, ramis inarticulatis striatis ramulis quadri-

Cal. flaccidum, H. f. & H.

Cal. Montagnei, H. f. & H.

fariis plumosis densissime obsitis, ramulis (seu pinnulis) brevibus pinnatis bipinnatisve articulatis pellucidis roseis, pinnulis patentibus, inferioribus simplicibus elongatis subulatis superioribus furcatis v. iterum pinnulatis, articulis diametro subduplo longioribus. C. Gaudichaudii, Ag.? Nobis *in Lond. Journ. Bot.* vol. iv. p. 274. (Tab. CLXXXVIII. Fig. II.)

Var. *β.* caulibus elongatis laxius ramosis basi nudis, ramulis paucioribus gelatinosis.

Hab. Hermite Island, Cape Horn; and Berkeley Sound, Falkland Islands. Var. *β.* Falkland Islands.

Radix scutata. *Frons* 2–3 unc. (in var. *β.* 4–5 unc.) longa, fruticulosa, ramosissima. *Caulis* crassiusculus, ¼ lin. fere diametro, e basi ramosus v. nudus superne præcipue in ramos undique patentes divisus. *Rami* primarii pluries divisi; secundarii ramulis pinnulisve parvis 1–1½ lin. longis undique vestiti. *Favellæ* magnæ, 2–3-lobatæ, lobis granulis plurimis farctis. *Color* siccitate atro-purpureus, madore sub lente roseo-purpureus. *Substantia* caulis ramorumque cartilaginea, ramulorum tener, chartæque adhærens.

In the London Journal of Botany we referred this plant with a mark of doubt, (and erroneously as it subsequently appears) to the *Cal. Gaudichaudii* of Agardh: a Falkland Island species, with which it seemed to agree in many particulars. Our kind friend, Dr. Montagne, has, with his usual liberality, supplied us with a portion of the original specimen of *C. Gaudichaudii*, which proves to be quite distinct. Its nearest northern allies are *C. Arbuscula* and *C. Brodiæi*, between which it appears almost intermediate, having the large size and robust habit of the former, with longer and more compound pinnules, and being much stouter than *C. Brodiæi*, having more opaque stems. The var. *β.* may be only an advanced state, having been gathered in the same locality with var. *α.*, but three months later in the season. It chiefly differs in its more tender and gelatinous substance, and in the branches being less densely clothed with ramuli, and nearly naked at the base. Its outward appearance is very much that of *C. tetragonum*, Ag.

Plate CLXXXVIII. *Fig.* II.—1, plant of the natural size; 2, branch and ramuli; 3, ditto with favella:—*magnified.*

8. Callithamnion *Gaudichaudii*, Ag. *Sp. Alg.* vol. ii. p. 173.

Hab. Falkland Islands; *Gaudichaud.*

9. Callithamnion *leptocladum*, Montagne *in Voy. au Pole Sud, Bot. Crypt.* p. 91.

Hab. Strait of Magalhaens; *D'Urville.*

40. CODIUM, *Stackh.*

1. Codium *tomentosum*, Stackh.; Fucus tomentosus, *Engl. Bot. t.* 712.

Hab. Hermite Island, Cape Horn; and the Falkland Islands; abundant. Kerguelen's Land?

This curious plant is equally widely diffused in the southern as in the northern and tropical zones; and the specimens from the different localities are very similar. What we believe to have been this species was collected in Kerguelen's Land, but no specimens appear to have been preserved.

41. CLADOTHELE, *Hook. fil. et Harv.*

Frons cylindracea, filiformis, viridis, solida, ramosa, extus papillosa. *Axis* cellulosa, densa, e cellulis magnis hyalinis vacuis cellulam centralem radiatim cingentibus formata. *Peripheria* cellulosa, cellulis coloratis (viridibus) pluriseriatis. *Utriculi* papilliformes, totam superficiem vestientes.—Alga *marina* Falklandica, *irregulariter ramosa, cordide viridis, ecorticata.*

1. Cladothele *Decaisnei*, Hook. fil. et Harv.; *in Lond. Journ. Bot.* vol. iv. p. 293. (Tab. CXC.)

Hab. Berkeley Sound, Falkland Islands; in the sea.

Radix fibrosa? *Frondes* 4–6 unc. altæ, cæspitosæ, filiformes, seta porcina crassiores, cylindraceæ, flexuosæ, plus minusve ramosæ, ramificatione valde irregulari. *Rami primarii* elongati, sæpe simplices, ramulis longis simplicibus sæpissime secundis curvatis v. incurvis vix attenuatis laxe donati. *Substantia* tenax. *Color* sordide viridis, siccitate cinerascens:—chartæ laxe adhæret.

A very curious plant, certainly related to *Codium*, especially to *C. simpliciusculum*, by the structure of the papillæ that cover its surface, and from which we have derived the generic name. The axis is, however, of very different structure from that of *Codium* or of any other genus of *Siphoneæ*, and more closely resembles that of *Polysiphonia*. In the specific name we wish to pay a deserved compliment to our friend M. *Decaisne*, who has thrown much light on the affinities of the corallinoid *Algæ*, especially those related to *Siphoneæ*.

Plate CXC.—*Fig.* 1, plant of the natural size; 2 ramus and ramuli; 3, longitudinal, and 4, vertical section of branch; 5, cellular tissue of ditto:—*magnified*.

42. BRYOPSIS, *Lamx.*

1. Bryopsis *plumosa*, Grev. *Alg. Brit.* p. 187.

Var. β. *Arbuscula*, J. Agardh, *Alg. Medit.* p. 21. B. Arbuscula, *Ag. Sp. Alg.* p. 451.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; abundant, both varieties.

The branches of the frond are narrower and pinnated nearer to the base, with the ramuli more uniform and shorter in some of the specimens than in others.

2. Bryopsis *Rosæ*, Ag. *Syst. Alg.* p. 179. *Bory in Duperrey Voy. Bot.* p. 211. t. 24. *fig.* 1.

Hab. Hermite Island, Cape Horn, and the Falkland Islands.

None of our specimens equal those figured by Bory in size, though they coincide in all other respects with the descriptions published by that author and Agardh. Our opinion is, that the present plant is not distinct from the *B. plumosa*, but is a large state of that very sportive species, depending probably on the temperature of the ocean it inhabits for its development. Some other species of this highly Protean genus are equally difficult to define; and we cannot but expect that a copious suite of specimens from different shores and depths will considerably diminish it.

43. VAUCHERIA, *DC.*

1. Vaucheria *Dillwynii*, Ag.; *Grev. Alg. Brit.* p. 191. t. 19. Conferva frigida, *Dillwyn*, t. 19.

Hab. Christmas Harbour, Kerguelen's Land; on the ground amongst the Penguin Rookeries.

The patches are very extensive and rather more glaucous than others collected near Edinburgh, with which the Antarctic specimens appear otherwise entirely to agree. The capsules are not always globose, as figured by Mr. Hassall, (Brit. Fresh-water Algæ) but often, if not more generally, horizontally elongated and gibbous; as shown in Greville's 'Algæ Brit.' (l. c.) where there is an excellent figure of this species.

2. Vaucheria *cæspitosa*, Ag.; *Grev. Alg. Brit.* p. 194.

Hab. Berkeley Sound, Falkland Islands; on the moist borders of fresh-water lakes, and in pendent masses from dripping rocks.

These specimens are dried very badly, so that we have not much confidence in our identification of the species.

Cladothele Decaisnei. H.f. & H.

Draparnaldia pusilla. H.f. & H.

Calothrix olivacea. H.f. & H.

I.

Conf. clavata, var. Darwinii.

II.

Conf. Sandvicensis, Gaud.

III.

Conf. incompta. H.f. & H.

IV.

Conf. simpliciuscula. H.f. & H.

44. BATRACHOSPERMUM, *Roth.*

1. Batrachospermum *vagum*, Ag.; *Harvey, Manual*, p. 119. *Lyngb. Hydroph. Dan.* t. 44.

Hab. Hermite Island, Cape Horn; in an alpine pool.

We cannot distinguish these from British specimens; an alpine locality is common to both, the English plant having been gathered on the summit of Snowdon.

45. DRAPARNALDIA, *Bory.*

1. Draparnaldia *pusilla*, Hook. fil. et Harv.; filis perpusillis densissime cæspitosis gelatinosis parce vage ramosis flexuosis, ramulis perpaucis brevibus apice non setigeris simplicibus, articulis coloratis luteo-viridibus diametro sub-duplo longioribus. Nobis *in Lond. Journ. Bot.* vol. iv. p. 296. (Tab. CXC. Fig. II.)

Hab. Berkeley Sound, Falkland Islands; growing on the roots of *Crantzia lineata*, in fresh-water.

Fila sub ¼ unc. longa, radices radiculasque submersas vestientia, diametro *D. tenuis*, cui verosimiliter species affinis; differt præcipue filis rigidioribus ramulisque non setigeris.

We have referred this and the following species to the genus *Draparnaldia* with little hesitation, from their affinity with *D. tenuis*, Ag. Those naturalists, however, who know the great difficulty of examining such things in a dried state, will best understand the uncertainty which attaches to all determinations of species belonging to these tribes which are not from the fruit, or from characters of higher importance than the filamentous branches, evidently referable to known forms.

Plate CXC. *Fig.* II.—1, plant of the natural size, on roots of *Crantzia lineata*; 2 and 3, threads;—highly *magnified*.

2. Draparnaldia *sp.?*

Hab. Hermite Island, Cape Horn; in stagnant water on the hills.

The filaments of this species are infinitely more slender than those of the last, but similarly gelatinous and of the same structure.

46. CONFERVA, *Ag.*

1. Conferva *clavata*, Ag.? *Syst. Alg.* p. 99.

Var. *Darwinii*; pro genere maxima, filis 2 uncialibus e basi gradatim incrassatis, articulis ad nodos constrictis diametro paulo longioribus, inferioribus longioribus, supremis ¼ unc. latis. (Tab. CXCII. Fig. I.)

Hab. Cape Tres Montes, on *Sphacelaria funicularis*; *C. Darwin, Esq.*

Of this variety we have seen but one specimen and refer it doubtfully to the *C. clavata* of the Cape of Good Hope and New Zealand, to which it is certainly very closely allied.

Plate CXCII. *Fig.* I.—Plants of *C. clavata*, var. *Darwinii*, of the natural size, parasitical on *Sphacelaria funicularis*, Mont.

2. Conferva *Linum*, Ag.; *Harv. Man. Brit. Alg.* p. 128.

Hab. Christmas Harbour, Kerguelen's Land; in the sea, on rocks near high-water mark.

A widely distributed species, found from the Canary Islands, Mediterranean and Black Sea, to the coasts of

Scotland, also on the east coast of North America, the West Indies, and on the west coast of South America. It is singular that Kerguelen's Land should be its only hitherto recorded locality in the Southern Hemisphere.

3. Conferva *Sandvicensis*, Ag.; *Syst. Alg.* p. 92. (Tab. CXCII. Fig. II.)

Hab. Berkeley Sound, Falkland Islands; in pools of fresh water, and hanging from wet rocks.

Massa pedalis et ultra, mollissima, pallide sed læte viridis, e filis tenuissimis arachnoideis densissime fastigiatis constans. *Fila* hyalina, flaccidissima, simplicissima, vix intertexta, aciem oculorum fugientia. *Articuli* diametro duplo longiores, subvitrei; sacculo endochromatis interno medio constricto, læte virente, pellucido.

Our specimens entirely agree with Agardh's description of a plant brought from the Sandwich Islands by M. Gaudichaud.

Plate CXCII. *Fig.* II.—1, plant of the natural size; 2, portion of a thread; 3 & 4, other portions of ditto:—both very highly *magnified*.

4. Conferva *angulata*, Hook. fil. et Harv.; fluitans reptansve, filis simplicibus tenuissimis brevibus strictiusculis hic illic incrassatis angulatisque angulis radiculo ramulove abnormali auctis, articulis diametro 3–5-plo longioribus coloratis, endochromate siccitate contracto. Nobis *in Lond. Journ. Bot.* vol. iv. p. 295. (Tab. CXCI. Fig. II.)

Hab. Christmas Harbour, Kerguelen's Land; common in streams, pools, and lakes of fresh water.

Fila intertexta, tenuissime capillacea, in massam pallide virescentem subnitentem conferta. *Articuli* siccitate contracti, æquales, nunc medio incrassati, nucleati, rarissime ramum emittentes, sæpissime radicula parva uniarticulata aucti, nunc geniculatim curvati.

Allied to the British *C. bombycina*, but readily distinguishable by its greater rigidity, angular flexures, radicles and different incrassations, which do not appear to us of the same character as those of Mr. Hassall's genus 'Vesiculifera.' The filaments are sometimes ramified, though very rarely, and perhaps only at the very base: the branch is always at right angles to the filament.

Plate CXCI. *Fig.* II.—1, plant in mass, of the natural size; 2, thread of ditto; 3, portion of ditto with branch; 4, ditto with rootlets?; 5, ditto with swollen joint:—all very highly *magnified*.

5. Conferva *ambigua*, Hook. fil. et Harv.; filis basi intertextis adnatis? capillaribus rigidulis nigro-virescentibus longe fluctuantibus simplicibus hic illic spurie? ramosis radicantibus, nunc processubus lateralibus anastomosantibus auctis diametro 2–3-plo longioribus opacis sacculo endochromatis repletis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 295. (Tab. CXCI. Fig. I.)

Hab. Christmas Harbour, Kerguelen's Land; in the sea.

Fila 4–5 unc. longa, basi in stratum densum intertexta, deinde libera, elongata, massam crinitam efficientia.

Plate CXCI. *Fig.* I.—1, plant of the natural size; 2, filament from ditto:—*magnified*.

6. Conferva *quadratula*, Hook. fil. et Harv.; pusilla, filis tenuibus pallide viridibus flexuosis intricatis cylindraceis, articulis quadratis siccitate endochromate collapso notatis. (Tab. CXCI. Fig. IV.)

Hab. Christmas Harbour, Kerguelen's Land; in pools and streams of fresh water; very common.

Fila simplicissima, sub $\frac{1}{4}$ unc. longa, in strato dilute viridia, implicata, crispata, diametro *C. flocosæ* duplo triplove superantia. *Articuli* longitudine diametrum æquantes, cylindracei, ad nodos non constricti, pellucidi, endochromate plerumque in massam linearem viridem collapso medio notati.

Plate CXCI. *Fig.* IV.—1, plant of the natural size; 2, thread from ditto; 3, portion of ditto:—both very highly *magnified*.

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I.

Cladophora.

II.

Lyngbya fragilis. H. f. & H.

III.

Scharozyga tenax. H. f. & H.

7. Conferva *podagraria*, Hook. fil. et Harv.; filis simplicibus basi intertextis breviusculis fluctuantibus flexuosis flaccidis flavo-viridibus cylindraceis, articulis opacis elongato-quadratis diametro ¼–2-plo longioribus sacculo endochromatis repletis integumento externo sæpissime incrassato nodoso. (Tab. CXCI. Fig. III.)

Hab. Christmas Harbour, Kerguelen's Land; in streams of fresh water, attached to stones or earth.

Massæ unciam latæ, nunc latius extensæ, pallide virescentes. *Fila* flexuosa, ½ unc. longa, laxe intertexta, opaca, e basi simplicissima, cylindracea, subæquilonga. *Articuli* cylindracei, sacculo endochromatis repleti, sæpissime, ob tegumentum externum morbo affectum, incrassati et nodosi.

A remarkably distinct little species, forming patches in the water. The threads are densely tufted, curled, and ascending, rather stout in proportion to their length, but flaccid and somewhat soft in consistence; they are generally covered at some part of their length with a thickened opaque substance, of irregular form, extending over several of the joints at once, but more or less evidently protuberant on one side of the thread. This appearance seems due to a diseased condition of the outer membrane; for the sac of endochrome is often seen to be unchanged beneath this thickening, which sometimes increases the filament to twice its usual diameter.

Plate CXCI *Fig.* III.—1, plant of the natural size; 2, healthy filament; 3, portion of altered ditto:—highly *magnified*.

40. CLADOPHORA, *Kütz.*

1. Cladophora *rupestris*, Linn.; *Dillw. Hist. Brit. Conf.* t. 28.

Hab. Christmas Harbour, Kerguelen's Land; on rocks in the sea.

These specimens are very characteristic of the northern *C. rupestris*, which inhabits all latitudes between the Arctic Circle and Mediterranean Sea on the west coast of Europe.

2. Cladophora *flexuosa*; *Dillw. Hist. Brit. Conf.* t. 10.

Berkeley Sound, Falkland Islands; in the sea.

Specimens not very satisfactory, but we think referable to this species. The ramuli are secund, and the other characters of *C. flexuosa* are tolerably evident.

3. Cladophora *arcta*; *Dillw. Brit. Conf. Suppl.* t. E.

Var. *centralis*, Conferva centralis, *Lyngb.* et auct.

Hab. Hermite Island, Cape Horn, and in the Falkland Islands; very abundant, in the sea.

Decidedly the European plant of the name, which is a native of the German and North Atlantic Ocean.

4. Cladophora *riparia*, Roth; *Engl. Bot.* t. 2100.

Hab. Christmas Harbour, Kerguelen's Land; on rocks near high-water mark.

A native also of the German Ocean, the North Sea, and West Indian Islands.

5. Cladophora *Falklandica*, Hook. fil. et Harv.; filis densissime cæspitosis flaccidis flexuosis intricate ramosissimis læte virescentibus, ramis secundariis longissimis subsimplicibus undulatis flexuosis brevibus secundis, ramulis patentibus distantibus, articulis granuliferis diametro triplo-quintuplo longioribus. Nobis *in Lond. Journ. Bot.* vol. iv. p. 294. (Tab. CXCIII. Fig. I.)

Hab. Berkeley Sound, and St. Salvador Bay, Falkland Islands; on muddy rocks in the sea, abundant.

Cæspites 6–10 unc. longi, densissime fastigiati, e filis flexuosis intertextis gracillimis quasi crinitis formati. *Rami* flexuosi, elongati; secundarii valde elongati, simplices, ramulis brevibus longioribusve patentibus secundis ornati.

Apparently very distinct from any hitherto described species: its remarkable characters are its wavy habit, and the great length and simplicity of the upper branches, which are furnished with more or fewer, short, patent, secund ramuli.

PLATE CXCIII. *Fig.* I.—1, plant of the natural size; 2, branch and ramuli; 3, apex of branch; 4, portion of ditto:—very highly *magnified*.

6. CLADOPHORA *incompta*, Hook. fil. et Harv.; filis intricatis incomptis atro-viridibus opacis rigidis setaceis tortuosis vix ramosis, ramis longe nudis v. ramulis brevibus pectinatis circinato-inflexis ornatis, ramulis ultimis secundis v. alternis patentissimis obtusis approximatis remotisve, articulis diametro brevioribus quadratis v. ½ longioribus. Nobis *in Lond. Journ. Bot.* vol. iv. p. 294. (TAB. CXCII. Fig. III.)

HAB. Hermite Island, Cape Horn; in the sea.

Cæspites intertexti, horizontaliter extensi, atro-olivacei, rigidi. *Fila* intricata, irregulariter parce ramosa, latiuscula, *C. simpliciuscula* diametro duplo excedentia. *Rami* flexuosi, sæpe nudi, non raro ramulis involutis pectinatis obsiti, ut in *C. flexuosa*. *Color* luride ater v. virescens, opacus. *Substantia* siccitate rigida:—chartæ minime adhærat.

PLATE CXCII. *Fig.* III.—1, plant of the natural size; 2, portion of ditto, highly *magnified*, with abbreviated ramuli; 3, another portion of ditto and branch:—still more highly *magnified*.

7. CLADOPHORA *simpliciuscula*, Hook. fil. et Harv.; filis intricatis incomptis atro-viridibus opacis flexuosis rigidiusculis capillaribus irregulariter subramosis, ramis valde remotis elongatis simplicibus, ramulis perpaucis patentissimis filiformibus sæpe secundis articulis diametro æqualibus v. ½–2 plo longioribus, sæculum endochromatis intus foventibus. Nobis *in Lond. Journ. Bot.* vol. iv. p. 295. (TAB. CXCII. Fig. IV.)

HAB. Hermite Island, Cape Horn, and the Falkland Islands; on sea-weeds, stones, and shells.

Cæspites intertexti, opaci, lurido virides, subhorizontaliter extensi. *Fila* 1–2 unc. longa, remote et irregulariter ramosa; rami ramulis perpaucis aucti:—chartæ non adhærat.

Allied to *C. riparia*, but more robust, also near the *C. flagelliformis* of the Cape of Good Hope, but with a very different habit from that plant.

PLATE CXCII. *Fig.* IV.—1, plant of the natural size; 2, portion of thread and branch; 3, cells of ditto:—very highly *magnified*.

8. CLADOPHORA *glaucescens*, Griff.? *Harv. Manual*, p. 139.

HAB. Hermite Island, Cape Horn; rare.

We are not at all satisfied with the reference of the Antarctic plant to the British *C. glaucescens*, which has slenderer filaments. The specimens resemble that species more nearly than any other, and are not in a sufficiently good state for a proper comparison.

48. OSCILLATORIA, *Vauch.*

1. OSCILLATORIA *purpurea*, Hook. fil. et Harv.; strato gelatinoso tenaci siccitate translucente purpureo, filis violaceis omnium tenuissimis dense intertextis curvatis longe radiantibus, striis inconspicuis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 297.

HAB. Kerguelen's Land; in alpine rivulets, alt. 300–700 feet.

Species admodum singularis, *Lyngbyæ prolificæ*, Grev. (Scot. Crypt. Flor. t. 303,) plerisque notis affinis, nec

non (suadente clariss. Berkeley), cum *Bysso aquatico*, *D.C.*, (Geneva Trans. vol. ii. p. 29,), *Oscillatoria rubescente*, Bory et cum *Conferva purpurea* quoque conferenda. *Fila* muscos submersos strato gelatinoso translucente vestientia, dum maxime amplificata lineis transversis obscure notata.

2. Oscillatoria *autumnalis*, Agardh *Syst.* p. 62.; *Harvey, Manual of Brit. Alg.* p. 165.

Hab. Falkland Islands; on wet rocks; Cockburn Island, Graham's Land (Lat. 64° S. Long. 57°.W.) in moist places.

We have carefully compared this with Captain Carmichael's Appin specimens of *O. autumnalis*, and find them to be quite the same species, which is considered common in England, though Mr. Hassall quotes Captain Carmichael's habitat as the only one. The figure in the last named author's 'British Fresh-water Algæ,' is very unlike either Captain Carmichael's or the Antarctic specimens; in both of which the striæ are nearer to one another than the filament is broad. The diameter of the Cockburn Island filaments is $\frac{1}{1000}$ of an inch.

49. CALOTHRIX, *Alg.*

1. Calothrix *olivacea*, Hook. fil. et Harv.; cæspite majusculo intense olivaceo v. ærugescente erecto strictiusculo, filis basi dichotome v. alterne divisis luteis flavidisve superne strictiusculis flexuosisve in funiculos crispatos tenaces cohærentibus per totam longitudinem connexisve apice liberis obtusiusculis, endochromate opaco obscure striato, articulis diametro longioribus brevioribusve. Nobis *in Lond. Journ. Bot.* vol. iv. p. 296. (Tab. CXC. Fig. III.)

Hab. Christmas Harbour, Kerguelen's Land; in alpine rivulets, adhering to stems and leaves of mosses, &c.

Cæspites fasciculati, interdum extensi, $\frac{1}{2}$ unc. longi, intense colorati, olivacei lete ærugescentesve, siccitate vix nitentes. *Fila C. distorta* multoties latiora, flexuosa sed non torta, cæpisime in fasciculos siccitate crispatos connexa, circa $\frac{1}{1000}$ unc. lata, basi flavescentia, ramosa v. divisa.

A very pretty species and quite distinct from any European one with which we are acquainted.

Plate CXC. *Fig.* III. —1, plant of the natural size; 2, filaments; 3, upper, and 4, lower portion of ditto:—much *magnified*.

2. Calothrix distorta, *Harvey, Manual of Brit. Alg.* p. 158. *Engl. Bot.* t. 257.

Hab. Falkland Islands; in pools of fresh water.

The specimens, though in a very indifferent state, are clearly referable to the English *C. distorta*.

50. LINGBYA, *Ag.*

1. Lyngbya *muralis*, Agardh; Conferva muralis, *Dillwyn, Brit. Conferv.* t. vii.

Hab. Falkland Islands; on the ground, abundant.

These we have carefully compared with original British specimens of *L. muralis*, and find them to differ only in having the filaments rather broader and more opaque.

2. Lyngbya *fragilis*, Hook. fil. et Harv.; filis minutis tenuissimis fragilibus flavo-viridibus tortuosis implexis in stratum tenue lutescens cohærentibus, striis densissimis. Nobis *in Lond. Journ. Bot.* vol. iv. p. 296. (Tab. CXCIII. Fig. II.)

Hab. Berkeley Sound, Falkland Islands; on the fur of a dead rabbit.

Fila L. murali subsimillima, sed diametro $\frac{1}{4}$ angustiora, fragilimaque. *Stratum* tenue, lutescens v. flavo-virescens, vix nitens.

A plant so nearly related to the common *L. muralis*, of Britain, as to require no detailed description.

PLATE CXCIII. *Fig.* II.—1, plant of the natural size; 2, thread, highly *magnified*; 3, portion of ditto;—still more highly *magnified*.

3. LYNGBYA *subarticulata*, Hook. fil. et Harv.; filis tenuissimis laxe implexis vix tortis hic illic obscure subarticulatis, sporidiis disciformibus diametro variis filum vix ¼ æquantibus ad articulos spurios fili solutis.

HAB. Christmas Harbour, Kerguelen's Land; creeping amongst *Ulvæ* &c., on wet rocks near the sea.

Fila cylindracea, sub $\frac{1}{1000}$ unc. lata, pellucida, obscure articulata, articulis diametro ter longioribus, intus cum axi e sporidiorum disciformium composito aucti. *Sporidia* læte viridia, opaca, ter quaterve latiora quam longa.

A very different species from either of the two former. Each filament is a transparent tube, very obscurely incrassated, as if jointed here and there, and containing an axis of sporidia about half its own diameter. The sporidia are discoid, of various breadth and length, but always much broader than long, of a bright green colour, and interrupted opposite the spurious articulation of the filament.

51. MICROCOLEUS, *Desmaz.*

1. MICROCOLEUS *repens*, Harvey; *Manual*, p. 168. Oscillatoria repens, *Agardh Syst.* p. 61. O. chthonoplastes β, *Harvey in Hook. Brit. Fl.* vol. ii. p. 373.

HAB. Cockburn Island, Graham's Land; (Lat. 64° S. Long. 57° W.) on the ground.

Our specimens are very poor, as might be expected from the native place being on the limits of vegetation in that quarter of the globe which the plant inhabits.

52. ULVA, *L.*

1. ULVA *Lactuca*, Linn; *Grev. Scot. Crypt. Flor.* t. 313.

HAB. Hermite Island, Cape Horn; sparingly.

2. ULVA *latissima*, Linn.; *Engl. Bot.* t. 1551.

HAB. Hermite Island, Cape Horn; Falkland Islands and Kerguelen's Land; very abundant.

There is probably no shore between that of Iceland and Cape Horn, that does not produce abundantly this species of *Alga*.

3. ULVA *rigida*, Agardh, *? Syst. Alg*, p. 189.

HAB. Port William, Falkland Islands; common.

Our specimens appear to be only a young dark-coloured variety of the former. The species is also a native of Brazil, and the west coast of South America.

4. ULVA *Linza*. Linn.; *Harv. Phyc. Brit.* t. XXXIX.

HAB. Falkland Islands and Hermite Island, Cape Horn; abundant.

An abundant plant in the Atlantic and Mediterranean shores of Europe; it has also been collected in New Zealand.

5. ULVA *crispa*, Lightf.; *Harvey, Manual*, p. 171.

Trypothallus anastomosans, B.T. & H.

Mastodia Rossiana, B.T. & H.

Hab. Berkeley Sound, Falkland Islands; on moist rocks; Cockburn Island, Graham's Land; very abundant.

A highly interesting species, because it is one of the very few terrestrial plants that have been gathered on the limits of vegetation both in the Northern and Southern Hemispheres. It was collected in Spitzbergen, (in 80°. N.) by the officers of Captain Parry's Expedition towards the North Pole, and is a native of many intervening latitudes. We have carefully compared these specimens with Agardh's original ones of *U. crispa*, from Norway, and find them to be identical. The Cockburn Island specimens are in fine fruit

6. Ulva *cristata*, Hook. fil et Harv.; pusilla, stratum continuum furfuraceum efficiens, frondibus crispatis lacunosis latioribus quam longis supra medium in laciniis perplurimis fissis, laciniis filiformibus fistulosis tortis pluries divisis processubus corniculatis simplicibus ramosisque undique obsitis, substantia tenerrima, spotis confertis irregulariter dispositis rarius quaternis.

Hab. Kerguelen's Land; in moist clefts of rocks overhanging Christmas Harbour, growing with *Trypethallus anastomosans*.

Frondes singulæ 2–6 lin longæ, latiores quam longæ, sessiles, basi contractæ, læte virescentes, fragiles, marginibus crispatis, superficie lacinioso v. profunde rugoso; laciniis perplurimis gracilibus compressis v. teretibus, fistulosis, processubus divaricatis undique ornatis.

A species so closely resembling the *U. crispa*, that we at first sight confounded it with that plant: it is, however, abundantly distinct, in the much smaller spores, and in the curious long and slender laciniæ of the frond, which are tubular in the specimens we have examined, and, as well as the margins of the sessile frond, are studded with short simple or divided horn-like processes, or abbreviated ramuli.

53. MASTODIA, *Hook. fil. et Harv.*

Frons plana, membranacea v. subcarnosa, viridis, late expansa, inordinate areolata. *Fructificatio* duplex: 1°. *Sporidia* granuliformia, in areolis indefinita (ut in *Ulva*) fronde immersa. 2° *Conceptacula* mammæformia, fronde immersa, apice mamilla instructa, materie grumosa repleta, sporasque ellipticas foventia.—*Genus* Ulvæ *proximum, et nisi presentia* conceptaculorum *nullo modo distinguendum*.

1. Mastodia *tessellata*, Hook. fil. et Harv: Ulva tessellata, nobis *in Lond. Journ. Bot.* vol. iv. p. 297. (Tab. CXCIV. Fig. II.)

Var. *α*. fronde tenuissimâ, laciniis longioribus.

Var. *β*. fronde carnosa siccitate rigida, laciniis rotundatis.

Hab. Kerguelen's Land; var. *α*. in streams of fresh-water. Var. *β*. on stones occasionally exposed in a fresh-water lake.

Frons foliacea, 1–2 unc. lata, lurido viridis, subplicata, siccitate rigidiuscula, subereeta v. in var. *β*. horizontaliter expansa, sub lente granulis majusculis opacis in areolas quadratas compositas dispositis pulcherrime quasi tessellata, demum in lacinias plurimas undulato-crispatas rotundatas fissa; areolis quadratis, lineis hyalinis circumscriptis, granulis magnis quaternis. *Conceptacula* exemplaribus omnibus nobis visis perplurima, ad angulos areolarum majorum sita, elevata, mammæformia, apice pallidiore, crassa et carnosa, intus cava, materie grumosa sporisque lineari-ellipticis viridibus immixtis farcta.

Erroneously described as a marine species in the London Journal of Botany. Even when destitute of fruit it is specifically very distinct from any *Ulva*, especially in the great size of the granules, and their comparative remoteness from one another. The curious hemispherical bodies are abundant in all the specimens, and resemble in some degree

the capsules of a *Nitophyllum*: whether they be an abnormal development, or organs of fructification rarely developed in the genus, may be a point of dispute. At first sight they were supposed to be caused by the puncture of an aquatic insect or other animal; but their appearing in specimens from different localities; their position, constantly at the angles of the greater areolæ, where four of these meet; their uniform size; the constant presence of the cavity filled with elliptic spores, taken especially along with the fact, that there is no sign of disease or lesion in the frond, would indicate these to be organs in a normal condition.

PLATE CXCIV. *Fig.* II.—1, Var. *a.*; 2, var. *β.*; both of the natural size; 3, apex of frond; 4, portion of ditto with conceptacles; 5, portion of ditto more highly *magnified*; 6, vertical section of conceptacle; 7, grumous contents from ditto; 8, spores from ditto:—all very highly *magnified*.

54. ENTEROMORPHA, *Link.*

1. ENTEROMORPHA *compressa*, Grev. *Alg. Brit.* p. 180. t. 18.

HAB. Hermite Island, Cape Horn, Falkland Islands, and Kerguelen's Land; very abundant.

2. ENTEROMORPHA *intestinalis*, Link. *Grev. Alg. Brit.* p. 179.

HAB. Hermite Island, Cape Horn; Falkland Islands, and Kerguelen's Land; with the former.

These two species enjoy equally wide ranges with the *Ulva latissima*. I have found it very difficult to distinguish between this and the former species, even when growing, and between *E. compressa* and *Ulva Linza* in a young state. In the Falkland Islands the *U. latissima* abounds in the land-locked Lagoons, and the *U. Linza* in the harbours where no heavy seas run; whilst the *Enteromorpha compressa*, and *intestinalis*, may be collected on the shores of the weather-beaten coasts. Hence it becomes difficult for the collector to regard these species, whose structure and organization are so similar, as anything more than states of one plant, which commences as a pyriform bladder wherever it germinates, but whose future outline is determined by the depth and tranquillity or the reverse of the element it inhabits, and other natural causes. Such specimens as our Herbaria generally afford, are too often, if not fragmentary, immature; the full development of the species being arrested by the collector, who is content with one entire specimen in whatever stage of growth, and generally preserves it without any note of the conditions under which it was gathered. A few observations on the forms which the *Algæ* assume during different stages of their growth, would be eminently useful: portions of a crop of such species as this, which often covers shells or pebbles, might readily be transported to other waters, whose state is very different from what the plant enjoyed before. It cannot be doubted that great changes in form would be the consequence; and it is on outline alone that specific characters are chiefly founded.

55. PORPHYRA, *Ag.*

1. PORPHYRA *vulgaris*, Ag. *Grev. Alg. Brit.* p. 169.

HAB. Hermite Island, Cape Horn; the Falkland Islands, and Kerguelen's Land; very abundant.

This has as wide a range in latitude and longitude as *Ulva latissima*.

2. PORPHYRA *laciniata*, Ag. Ulva umbilicata, *Engl. Bot.* t. 2296.

HAB. Hermite Island, Cape Horn; the Falkland Islands, and Kerguelen's Land; very abundant.

Obviously a variety, or rather state of *P. vulgaris*; of which the *P. Columbina*, Mont., is probably the young, and *P. Capensis*, Kütz. another variety.

56. TRYPOTHALLUS, *Hook. fil. et Harv.*

Frons subcartilagineo-carnosa, vix gelatinosa, undulato-crispata, lobata, e cellulis hyalinis in stratum conglobatis

efformata, primum continua, matura terebrata v. clathrata (cellulis in lineis anastomosantibus dispositis) demum in massam gelatinosam subgranulosam collabens. *Sporæ* (seu granulæ) plerumque binæ, anguste lineari-oblongæ. —*Genus* Palmellæ *affine, sed indole frondis diversissimum.*

1. TRYPOTHALLUS *anastomosans*; Hook. fil. et Harv.; Palmella? anastomosans, *nobis in Lond. Journ. Bot.* vol. iv. p. 298. (TAB. CXCIV. Fig. I.)

HAB. Christmas Harbour, Kerguelen's Land; in clefts of rocks, and in damp caves, near the sea.

Frons ¼–½ unc. longa, undulato-crispata, pallide viridis, prima facie *Ulvam furfuraceam* referens, e strato unico cellularum formata, translucida; *junior* continua, suberecta v. horizontaliter extensa, margine lobata; matura (e cellulis in lineas dispositis) pulcherrime clathrata, foraminibus diametro variis pertusa. *Cellulæ* hyalinæ, marginibus sub lente vix distinctis, densæ aggregatæ, rotundatæ v. obtuse angulatæ. *Sporæ* axi cellularum immersæ, plerumque binæ, lete virides (sub lente), post marcescentiam frondis diametro auctæ, cellulasque fere implentes.

We referred this plant doubtfully to *Palmella*, in the London Journal of Botany; and now, unhesitatingly, we place it in a new genus, most distinct from any previously defined. Under the microscope it is a very beautiful object, the full grown specimens appearing as a transparent frond, firmer and more membranous than *Palmella*, and much thicker in proportion than any *Ulva*, beautifully clathrate or formed of anastomosing branches: the branches are composed generally of one, or more rarely, of two collateral lines of cells, each containing a pair of parallel minute spores, of a bright green colour, placed at right angles to the axis of the branch.

PLATE CXCIV. *Fig.* I.—1, plant in its foliaceous and reticulated condition; 2, the same at a later stage, forming a gelatinous mass; 3, the same with the spores disunited;—all of the natural size; 4, portion of foliaceous state; 5 and 6, portions with anastomosing structure; 7 and 8, spores:—all very highly *magnified*.

57. PROTOCOCCUS, *Ag.*

1. PROTOCOCCUS *stercorarius*, Berk.; strato aurantiaco demum subrimoso, globulis demum margine pellucidis nucleis subgranulatis conformibus.

HAB. Falkland Islands; on cow-dung; abundant.

P. nivali, Desm., (quæ eadem est ac *P. pluvialis*, Flotow) affinis, sed globulis minoribus saturatius coloratis, *Hæmatococco Orsinii*, Menegh., quoque referens.

This curious vegetable appears abundantly in places frequented by cattle, covering their droppings with a pale orange stratum in a very short space of time. For the identification and description of the species we are indebted to our learned friend Mr. Berkeley, who had previously observed the same plant in England.

58. NOSTOC, *Vauch.*

1. NOSTOC *commune*, Vauch. *Conferv.* p. 223. t. 16. f. 1.

HAB. Christmas Harbour, Kerguelen's Land; on wet rocks near the sea.

The Rev. M. J. Berkeley has favoured us by examining this, the following, and several other of the lower forms of *Algæ* collected during the Antarctic Expedition: of the present he says that it scarcely differs from the *N. commune*, of England, which is common throughout Europe, and in Bolivia and the Canary Islands.

2. NOSTOC *microscopicum*, Carm.?; Harv. *Man. Brit. Alg.* p. 184.

HAB. Christmas Harbour, Kerguelen's Land; on wet rocks near the sea.

Specimens rather larger than those of British growth, but not otherwise different. Mr. Hassall considers the *N. microscopicum* to be a variety of *N. muscorum*, Ag.

59. ANABAINA, *Bory.*

1. ANABAINA *tenax*, Hook. fil. et Harv.; strato globuloso definito lobato gelatinoso fluctuante æruginoso, filis densissime intertextis flexuosis moniliformibus inæqualibus hic illic interruptis, articulis plerumque globosis angulatisve nunc transverse elongatis, majoribus ellipticis oblongis limbo hyalino cinctis solitariis plurimisve. Sphærozyga tenax, *nobis in Lond. Journ. Bot.* vol. iv. p. 298. (TAB. CXCIII. Fig. III.)

HAB. Falkland Islands; in small pools of water on the hills.

Stratum 1–3 unc. latum, e massis $\frac{1}{2}$–$\frac{1}{3}$ uncialibus conglobatis efformatum, gelatinosum, hyalinum, pulchre æruginosum, natans. *Substantia* gelatinosa, sub lente oculum fugiens. *Fila* perplurima, dense aggregata, diametro varia. *Articuli* sub lente glauco-virescentes, opaci, majores translucidæ.

A very distinct and beautiful species, evidently congeneric with the *Sphærozyga Jacobi*, of which the Rev. M. J. Berkeley has published an excellent figure in the Supplement to English Botany, (t. 2826. fig. 2.) but which we do not consider generically distinct from *Anabaina*. The granular substance of the larger articuli is of a different nature from that filling the smaller one, being more transparent, and confined in a proper cyst, between which and the border of the articulation there is a transparent space. The stratum is as firm as that of *Nostoc cæruleum*, and the specimens preserved resemble a dried mass of *Oscillatoria*.

Specifically this differs from *A. Jacobi* in the form of the stratum, and from *A. flos-aquæ* in the straightness of the larger articulations.

PLATE CXCIII. *Fig.* III.—1, plant of the natural size; 2, threads; 3, portion of a thread with spores; 4, spores:—highly *magnified*.

60. CHROOLEPUS, *Ag.*

1. CHROOLEPUS *aureus*, Harv. *in Hook. Brit. Flor.* vol. ii. p. 380. Conferva aurea, *Dillwyn, Hist. Conf.* t. 35.

HAB. Hermite Island, Cape Horn; Kerguelen's Land, and the Falkland Islands; very abundant on the under surfaces of rocks near the sea, &c.

One of the commonest vegetable productions in the Antarctic Islands, growing under circumstances where no *Lichen*, or other cryptogamic plant, flourishes. It was always found near the *Lecanora miniata*, and is very abundant in situations sheltered from the direct rays of the sun. When fresh, or rather during drying, it emits a very evident smell of violets.

2. CHROOLEPUS *ebeneus*, Ag. *Syst. Alg.* p. 36. Conferva ebenea, *Dillwyn*, t. 101. Byssus niger, *Engl. Bot.* t. 702.

HAB. Hermite Island, Cape Horn; in clefts of rocks in the woods.

Like the former, this species, invariably shuns the light in the south. It was found in damper places than *C. aureus*. Both are, very probably, abnormal states of some *Lichen*.

LVI. DIATOMACEÆ, *Ag.*

The Waters and the Ice of the South Polar Ocean were alike found to abound with microscopic vegetables belonging to this Order. Though much too small to be discernible by the naked eye, they occurred in such countless myriads, as to stain the Berg and the Pack-Ice, wherever they were washed by the swell of the sea; and when enclosed in the congealing surface of the water, they imparted to the Brash and Pancake-Ice a pale ochreous colour. In the open ocean, northward of the Frozen Zone, this Order, though no doubt almost universally present, generally eludes the search of the naturalist; except when its species are congregated amongst that mucous scum which is sometimes seen floating on the waves, and of whose real nature we are ignorant; or when the coloured contents of the marine animals who feed on these Algæ are examined. To the south, however, of the belt of ice which encircles the globe, between the parallels of 50° and 70° S., and in the waters comprised between that belt and the highest latitude ever attained by man, this vegetation is very conspicuous, from the contrast between its colour and the white snow and ice in which it is imbedded. Insomuch, that, in the eightieth degree, all the surface-ice carried along by the currents, the sides of every berg, and the base of the great Victoria Barrier itself, within reach of the swells, were tinged brown, as if the Polar waters were charged with oxide of iron.

As the majority of these plants consist of very simple vegetable cells, enclosed in indestructible silex (as other *Algæ* are in carbonate of lime), it is obvious that the death and decomposition of such multitudes must form sedimentary deposits, proportionate in their extent to the length and exposure of the coast against which they are washed, in thickness to the power of such agents as the winds, currents and sea, which sweep them more energetically to certain positions, and in purity to the depth of the water and nature of the bottom. Hence we detected their remains along every ice-bound shore, in the depths of the adjacent ocean, between eighty and 400 fathoms. Off Victoria Barrier (a perpendicular wall of ice, between one and two hundred feet above the level of the sea), the bottom of the ocean was covered with a stratum of pure white or green mud, composed principally of the siliceous cells of *Diatomaceæ*. These, on being put into water, rendered it cloudy, like milk, and took many hours to subside. In the very deep water off Victoria and Graham's Land, this mud was particularly pure and fine; but towards the shallower shores, there existed a greater or less admixture of disintegrated rocks and sand; so that the organic compounds of the bottom frequently bore but a small proportion to the inorganic.

Being indebted to the works of the illustrious Ehrenberg for all I knew of these organisms, previous to the sailing of the Antarctic Expedition, I had supposed the *Diatomaceæ* to belong to the Animal Kingdom *; and as they are unaccompanied in the Antarctic region by any evidence of a higher order of plants, I had always supposed vegetation to cease at a much lower latitude than these productions actually attain. The species were, however, collected on every available occasion, and transmitted, on my return to England, to Professor Ehrenberg, whose determination of the genera and species is here introduced, at the suggestion of the Rev. M. J. Berkeley and other eminent Cryptogamic botanists.

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* It is well known that the true nature of the *Diatomaceæ* has been long and unsuccessfully disputed, being claimed both by botanists and zoologists. No conclusive evidence on this subject had been adduced, till, within these very few days, it was the singular good fortune of my friend, Mr. Thwaites, of Bristol, a most acute observer and profound Cryptogamist, to detect several species of *Diatomaceæ* conjugating, in a manner perfectly analogous to that pursued by the *Zygnemata*: a fact which leaves no doubt of their vegetable origin in the minds of persons acquainted with his interesting observations. I am indebted to Mr. Thwaites for specimens of three British species of *Eunotia*, and *Gomphonema*, illustrating this important discovery, and mounted in fluid, after the beautiful plan invented by that gentleman for preserving vegetable tissues moist, and always ready for the microscope in the form of slides.

I must offer some apology for omitting a class of organisms which have been investigated, and considered of vegetable origin, by Prof. Ehrenberg, and which are almost equally abundant in the Antarctic Ocean with the *Diatomaceæ*, whether on the surface or at the bottom of the sea: these are the *Phytolitharia*, Ehrb. I am not aware of the precise limits of this Order, and of many of the genera composing it; but from casual allusions, I gather that the term *Phytolitharia* is a conventional one, employed to designate the siliceous and other inorganic particles, deposited in plants of a higher structure. Thus, *Lithodermatium* is a genus whose species are represented by modifications of the siliceous epidermis of one or many species of *Equisetum*; and the *Lithostylidia* are the siliceous cells of *Gramineæ**. It is not my object to discuss in this place the expediency of constituting such orders, genera, and species. The total absence of *Equiseta* from the Antarctic Flora, and of *Gramineæ* or other phænogamic plants from any position within 700 miles of Victoria Barrier where the *Phytolitharia* abound, renders it in the highest degree improbable that the latter should be of vegetable origin.†

A few remarks on the phases and situations under which these curious vegetables occurred, will not be misplaced here, especially as I have little to add to what is already known of their habits and organization.

Scattered on the surface of the ocean, the Antarctic *Diatomaceæ* were seen connected in filaments, or resolved into thesimple frustules, of which they are composed. When entire, they shewed no signs of motion or irritability. The grumous or granular contents of the cells were yellow under the microscope; but in mass the same species assumed an orange-brown, or burnt Sienna colour; the intensity of which depended on the denseness with which they were packed together.

The various means employed for selecting the species varied according to circumstances, as the following enumeration of the processes pursued will show. 1. Sea-water was filtered through closely woven bibulous paper (filter-paper), which latter was folded, dried, and carefully put away. If a certain measure of water be always thus treated, an approximate knowledge of the abundance and scarcity of the various species and genera occurring at different positions, may be gained. 2. The scum of the ocean almost invariably contains many species entangled in its mass; it was preserved in small phials, well secured. 3. A tow-net of fine muslin, used when the vessel's rate does not exceed two or three knots, secures many kinds, which may be washed off the muslin, and collected on filter paper. 4. The stomachs of *Salpæ*‡ and other (especially of the naked) mollusca, invariably contain *Diatomaceæ*, sometimes several species. These *Salpæ* were washed up in masses on the Pack ice, and in decay they left the snow covered with animal matter impregnated, as it were, with *Diatomaceæ*: the *reliquiæ* were preserved in spirits. 5. The dirt and soil of the *Penguin Rookeries*, and especially their Guano, abound in *Diatomaceæ*, perhaps originally swallowed by the *Salpæ* and Cuttle-fish, which themselves become the prey of the Penguins. 6. Ice encloses *Diatomaceæ*: they are deposited on the already formed ice by the waves, or frozen into its substance during calm weather, when the upper stratum of water rapidly congeals. Ice, so formed, generally breaks up by the swell of the sea into thin angular masses, which become orbicular by attrition, whence the name Pancake-ice. The Pancake-ice was often seen a few hours after a calm, covering leagues of ocean, and uniformly stained brown from the abundance of these plants. It was taken in buckets, and when removed from the water appeared perfectly pure and colourless. On melting, however, it deposited a pale red cloudy precipitate, excessively light, consisting wholly of *Diatomaceæ*. This precipitate was bottled on the spot, and proved

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* See Ehrenberg, in Schrift. Berlin Akad., June, 1841.

† On the contrary, I cannot but suspect that some of these *Phytolitharia* are the remains of *Crustacea*, and especially the siliceous (?) particles, which occur in the tunics of naked *Mollusca*.

‡ I do not remember to have examined the contents of the stomach of any *Salpa* between the latitudes of the N. Tropic and the 80° S., which did not contain the remains of *Diatomaceæ*. *Dictyocha aculeata* was universally found in the stomachs of those I opened when off Victoria Land.

more rich in species than any of the other collections. The specimens were also the best preserved; for Professor Ehrenberg observes, that some* thus obtained, appeared as if still alive, though collected three years previous to his examination, and subjected to many vicissitudes of climate. The snow sometimes falls on the surface of the still ocean-water, and does not *freeze*, but floats a honey-like substance, often called *Brash-ice*: treated in the same way as the Pancake-ice it yielded an abundant harvest. 7. The mud and other soundings from the bottom of the ocean, when brought up on the arming of the deep sea-lead, or the cliam or dredge, generally contain the siliceous skeletons or coatings of many species, with the markings on their surface retained.† 8. The fresh and salt waters and muddy estuaries of the Falkland Islands, and similar localities, present us with species, occurring under circumstances, altogether similar to what accompany their allies in Europe.

The universal existence of such an invisible vegetation as that of the Antarctic Ocean, is a truly wonderful fact, and the more from its not being accompanied by plants of a high Order. During the years we spent there, I had been accustomed to regard the phenomena of life as differing totally from what obtains throughout all other latitudes; for everything living appeared to be of animal origin. The ocean swarmed with *Mollusca*, and particularly entomostracous *Crustacea*, small whales and porpoises: the sea abounded with penguins and seals, and the air with birds: the animal kingdom was ever present, the larger creatures preying on the smaller, and these again on smaller still: all seemed carnivorous. The herbivorous were not recognized, because feeding on a microscopic herbage, of whose true nature I had formed an erroneous impression. It is, therefore with no little satisfaction that I now class the *Diatomaceæ* with plants, probably maintaining in the South Polar Ocean that balance between the animal and vegetable kingdoms, which prevails over the surface of our globe. Nor is the sustenance and nutrition of the animal kingdom the only function these minute productions may perform: they may also be the purifiers of the vitiated atmosphere, and thus execute, in the Antarctic latitudes, the office of our trees and grass-turf in the temperate regions, and the broad leaves of the palm, &c., in the Tropics. Though we possess incontestible proofs of the abundance of *silica*, contained in the ocean, from its being secreted so copiously by these plants, we are ignorant of the process by which it is assimilated, and the chemical state in which it is suspended in the sea-water. The end these plants serve in the great scheme of nature is apparent, on inspecting the stomachs of many sea-animals, as above stated. Owing to the indestructible nature of their shields, they tell their own tale.

I shall now notice the most remarkable feature in the distribution of these organisms. They possess more than ordinary interest, many of the species being distributed from Pole to Pole; while these, or others, are preserved in a fossil state, in strata of great antiquity. There is probably no latitude between that of Spitzbergen and Victoria Land, where some of the species of either country do not exist: Iceland, Britain, the Mediterranean Sea, North and South America, and the South Sea Islands, all possess Antarctic *Diatomaceæ*. The siliceous coats of species only known living in the waters of the South Polar Ocean, have, during past ages, contributed to the formation of rocks; and thus they outlive several successive creations of organized beings. The Phonolite stones of the Rhine, and the Tripoli stone, contain species identical with what are now contributing to form a sedimentary deposit (and perhaps at some future period a bed of rock), extending in one continuous stratum for 400 measured miles. I allude to the shores of the Victoria Barrier; along whose coast the soundings examined were invariably charged with Diatomaceous remains, constituting a bank which stretches 200 miles north from the base of Victoria Barrier, while the average depth of water above it is 300 fathoms, or 1,800 feet.‡

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* *Fragilaria pinnulata*, and some *Coscinodisci*.

† The soundings were invariably in greenish mud, into which the lead sometimes sunk for two feet. At times, this mud seemed almost wholly composed of Diatomaceous remains.

‡ This great depth, reaching to within a quarter of a mile of the Barrier, whose height appeared nowhere to exceed 200 feet, proves that the latter does not rest on this bank. The accumulation, however, of snow on the

Again, some of the Antarctic species have been detected floating in the atmosphere which overhangs the wide ocean between Africa and America. The knowledge of this marvellous fact we owe to Mr. Darwin, who, when he was at sea near the Cape de Verd Islands, collected an impalpable powder which fell on Captain Fitzroy's ships. He transmitted this dust to Ehrenberg, who ascertained it to consist of the siliceous coats, chiefly of American *Diatomaceæ*, which were being wafted through the upper regions of the air, when some meteorological phenomenon checked them in their course, and deposited them on the ship and surface of the ocean.

The existence of the remains of many species of this Order (and amongst them some Antarctic ones), in the volcanic ashes, pumice, and scoriæ of active and extinct volcanoes (those of the Mediterranean Sea and Ascension Island for instance), is a fact bearing immediately upon the present subject. Mount Erebus, a volcano 12,400 feet high, of the first class in dimensions and energetic action, rises at once from the ocean, in the 78th degree of south latitude, and abreast of the *Diatomaceæ* bank, which reposes in part on its base. Hence it may not appear preposterous to conclude, that, as Vesuvius receives the waters of the Mediterranean, with its fish, to eject them by its crater; so the subterranean and subaqueous forces which maintain Mount Erebus in activity, may occasionally receive organic matter from this bank, and disgorge it, together with those volcanic products, ashes and pumice.

Along the shores of Graham's Land and the South Shetland Islands, we have a parallel combination of igneous and aqueous action, accompanied with an equally copious supply of *Diatomaceæ*. In the Gulf of Erebus and Terror, 15 degrees north of Victoria Land, and placed in the opposite side of the globe, the soundings were of a similar nature with those of Victoria Land and Barrier, and the sea and ice as full of *Diatomaceæ*. This was not only proved by the deep-sea lead, but by the examination of bergs, which, once stranded, had floated off and become reversed, exposing an accumulation of white friable mud, frozen to their bases, which abounded with these vegetable remains.

The following systematically arranged catalogue of the hitherto described Antarctic species is drawn up from various papers by Professor Ehrenberg, but principally from that which appeared in the 'Monatsberichten der Berliner Akad. der Wissenschaften" for May, 1841, and which has been reprinted in Taylor's 'Annals of Natural History', and in the Appendix of Sir James Ross' 'Narrative of the Antarctic Expedition'. A few Falkland Island and Kerguelen's Land species have subsequently been examined by Mr. Thwaites, to whom, and to the Rev. Mr. Berkeley, I am much indebted for the assistance they have afforded me in this group. The arrangement of the genera followed is that of M. Kützing's great work on this order.

1. EUNOTIA, *Ehrb.*

1. Eunotia *gibberula*, Ehrb. Epithemia gibberula, *Kütz. Kieselsch. Bacill.* p. 35. t. 29. f. 54, *c.*

Hab. Open Ocean, in Pancake-ice, Lat. 75° S. Long. 170° W.

An inhabitant of the Baltic Sea. Found *fossil* at Newhaven, in Connecticut, in volcanic ashes from the Rhine and amongst an atmospheric dust which fell near the Cape de Verd Islands.

2. Eunotia *amphioxys*, Ehrb. *Kütz. l. c.* p. 44. t. 30. f. 1.

Hab. Falkland Islands, *Lesson.* Cockburn Island, amongst the guano of a Penguin rookery.

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surface of the barrier, in a climate where there is no thaw throughout the year, and where snow lies perennially, will result in the sinking of the barrier and its base becoming imbedded in this stratum of vegetable debris. Supposing the barrier, then, to have a progressive motion, such as smaller but similar glaciers exhibit, the result would be flexures of the pasty stratum of mud upon whose edge it rests, and against whose walls it would in time abut, as the deposit thickens.

Found living in the German Ocean and Sandwich Islands; in the natural paper of Silesia, and dead in the guano of Peru. *Fossil* as floating in the air with the former species. In peat, Iceland; earth, Labrador, and in strata on the banks of the Euphrates and Oxus. In the volcanic tuff of the Rhine and in Phonolite.

3. EUNOTIA *Faba*, Ehrb. Epithemia Faba, *Kütz. l. c.* p. 36. t. 5. f. 21.

HAB. Falkland Islands; on marine *Confervæ, Lesson.*

Abundant both recent and fossil, in Germany, Sweden, Finmark, Newfoundland, Labrador, and the Oregon. Also found in the volcanic tuff of the Rhine.

4. EUNOTIA *bicops*, Ehrb. *Kütz. l. c.* p. 37. t. 29. f. 65. *c.*

HAB. Falkland Islands; on marine *Confervæ, Lesson.*

Found in earth at Labrador and the Oregon.

2. FRAGILARIA, *Lyngb.*

1. FRAGILARIA *amphiceros*, Ehrb. *Schrift. Berl. Akad. Feb.* 1844.

HAB. Victoria Barrier, in Pancake-ice and in mud from 190 fathoms. Graham's Land, in mud from 270 fathoms. In a floating scum, Lat. 64° S. Long. 160° W.

Occurs fossil in Virginia, U.S.

2. FRAGILARIA *acuta*, Ehrb. *Kütz. Kieselsch. Bacill.* p. 46. t. 16. f. 7. *C.*

HAB. In Pancake-ice off Victoria Barrier, and in Lat. 75° S. Long. 170° W. In the stomach of a *Salpa*, taken in the open ocean, Lat. 64° S. Long. 157° W.

Previously only known as a fossil, occurring near Freiberg.

3. FRAGILARIA n. sp.? (indicated by Ehrb.)

HAB. Victoria Barrier; in mud from 190 fathoms.

4. FRAGILARIA *pinnulata*, n. sp. Ehrb. *Schrift. Berl. Akad. May*, 1844.

HAB. Pancake-ice, Lat. 75° S. 170° W., and near the continent of Victoria Land, 76° S., in Brash-ice. Graham's Land, in mud from 270 fathoms.

One of the most abundant Victoria Land *Diatomaceæ*.

5. FRAGILARIA *rotundata*, n. sp. *Ehrb. l. c.*

HAB. Pancake and brash-ice off Victoria Land and Barrier. In the stomachs of *Salpæ*, taken in Lat. 66° S. and Long. 170° W. Graham's Land, in mud from 207 fathoms.

6. FRAGILARIA n. sp.? (indicated by Ehrb.)

HAB. Victoria Land; in Brash-ice.

7. FRAGILARIA *granulata*, n. sp. *Ehrb. l. c.*

HAB. In the stomachs of *Salpæ*, Lat. 66° S. Long. 157° W. In the open sea near Cape Horn (*M. Schayer, fid. Ehrb.*). In oceanic scum, Lat. 64° S. Long. 160° W.

Lately indicated to exist as a fossil near the Araxes river.

8. Fragilaria *constricta*, Ehrb. *Kütz. l. c.* p. 46. t. 29. f. 25, *c.*

Hab. Falkland Islands; on marine *Confervæ*, *Lesson.*

Found in the volcanic tuff of the Rhine, and in Mexico.

9. Fragilaria *rhabdosoma*, Ehrb. F. capreina, *Kütz.* p. 45. t. 36. f. iii.

Hab. Falkland Islands; on marine *Confervæ*, *Lesson.*

A frequent inhabitant of pools and ditches in England, and many other parts of the world, including Asia, Africa, America and the South Sea Islands. In the sand-hills of Patagonia, and in the volcanic tuff of the Rhine.

10. Fragilaria *Trachea*, n. sp. Ehrb. *Schrift. Berl. Akad. l. c.*

Hab. Falkland Islands; on marine *Confervæ*, *Lesson.*

11. Fragilaria *Ventriculus*, n. sp. Ehrb. *l. c.*

Hab. Falkland Islands; on marine *Confervæ*, *Lesson.*

3. MELOSEIRA, *Ag.*

1. Meloseira n. sp.? filis moniliformibus tenuissime striatis pedunculo gelatinoso affixis, frustulis per paria coadunatis, junioribus sphæricis demum compressis, apicibus utrinque convexis. *Thwaites, MS.*

Hab. Kerguelen's Land; in the sea.

M. globiferæ, Harv. simillima, sed frustulis adultioribus semper compressis differt. *Fila* striata ut in *M. globifera*. *Thwaites, MS.*

4. PYXIDICULA, *Ehrb.*

1. Pyxidicula *dentata*, n. sp. Ehrb., *Schrift. Berl. Akad. May*, 1844.

Hab. Victoria Barrier; in Pancake-ice.

2. Pyxidicula *Hellenica*, Ehrb. *l. c.*

Hab. Victoria Barrier; in Pancake-ice. Graham's Land; in mud from 270 fathoms (doubtful as to species).

This has been found fossil in Bermuda, the Ægean Sea, and Maryland, U.S.

3. Pyxidicula n. sp.? Ehrb. *l. c.*

Hab. Victoria Barrier; in mud from 190 fathoms.

4. Pyxidicula sp.?

Hab. In the stomachs of *Salpæ*, Lat. 66° S. Long. 157° W.

5. HEMIZOSTER, n. g. *Ehrb.*

1. Hemizoster *tubulosus*, Ehrb., *Schrift. Berl. Akad. May*, 1844.

Hab. Victoria Barrier and Land; in Pancake-ice.

6. GALLIONELLA.

1. Gallionella *pileata*, n. sp. Ehrb. *l. c.*

Hab. Victoria Barrier; in Pancake-ice.

2. Gallionella *sulcata*, Ehrb., *Schrift. Berl. Akad. April*, 1837.

Hab. Victoria Land; in Pancake-ice (doubtful). Graham's Land; in mud from 270 fathoms.

An Arctic plant, having been observed at Melville Island. Also in the open ocean off Rio de Janeiro. It inhabits Peruvian and African guano; has been found in the sand-hills of Patagonia, fossil in Bermudas, Sicily, Algiers, Maryland and Virginia, *U. S.*; and in volcanic ashes from the Patagonian coast.

3. Gallionella *Sol*, n. sp. Ehrb.; *Schrift. Berl. Akad. May*, 1844.

Hab. Victoria Barrier; in mud at 190 fathoms. Graham's Land; in mud from 207 and 270 fathoms.

4. Gallionella *tympanum*, n. sp., Ehrb. *l. c.*

Hab. Graham's Land; in mud from 207 fathoms.

5. Gallionella *Oculus*, n. sp., Ehrb. *l. c.*

Hab. Graham's Land; in mud from 270 fathoms.

7. CAMPYLODISCUS, *Ehrb.*

1. Campylodiscus *Clypeus*, Ehrb. *Kütz. Kieselsch. Bacill.* p. 59. t. 2. f. v. 1–6.

Hab. Graham's Land; in mud from 270 fathoms.

Found fossil in Germany and Italy, in the Bermudas and in the *Mastodon* earth of the Plate river, in African guano, in the atmospheric dust near the Cape de Verd Islands, and in the volcanic tuff of the Rhine.

8. SURIRELLA, *Ehrb.*

1. Surirella (?) *australis*, Ehrb.; *Schrift. Berl. Akad. l. c.*

Hab. Falkland Islands; on marine *Conferveæ*, *Lesson.*

9. SYNEDRA, *Ehrb.*

1. Synedra *Ulna*, Ehrb.; *Infus.* t. 17. f. 1. *Kütz. l. c.* p. 66. t. 30. Exilaria Ulna, *Hassall, Brit. Fresh-water Alg.* p. 433. t. 27. f. 2.

Hab. Victoria Barrier; in Pancake-ice (doubtful). Graham's Land; in mud 270 fathoms.

One of the most abundant and easily recognized of the *Diatomaceæ*, not only in Europe but throughout the globe. Mr. Hassall states it to be of very frequent occurrence in fresh-water ponds and ditches of England. It is also found in Icelandic peat, in marine mud from Spitzbergen, in the natural paper of Silesia, and in the Tropical Ocean off Rio. As a fossil or dead, it has occurred in Oran and Sicily, the United States, in alluvial deposits in Brazil, the Euphrates River, and in atmospheric dust off the Cape de Verd Islands. It is also found in the volcanic tuff of the Rhine and in Peruvian guano.

10. DICLADIA, *N. G. Ehrb.*

1. Dicladia *antennata*, Ehrb.; *Schrift. Berl. Akad. May*, 1844.

Hab. Victoria Barrier; in Pancake-ice.

2. Dicladia *bulbosa*, Ehrb. *l. c.*

Hab. Victoria Barrier; in Pancake-ice.

This and the preceding always occurred abundantly in the stomachs of the Victoria Land *Salpæ*.

11. SCHIZONEMA, *Ag.*

1. Schizonema *sp.?* filis ramosis siccitate luride viridibus, frustulis ovato-oblongis siccis collapsis. *Thwaites, MS.*

Hab. Kerguelen's Land; abundant in the sea.

Very similar to, and possibly not distinct from, the British *S. implicatum*, Harv.

12. EXILARIA, *Grev.*

1. Exilaria, n. sp.? frustulis linearibus striatis e dorso visis leviter versus apices truncatos attenuatis, e latere visis utrinque obtuse apiculatis. *Thwaites, MS.*

Hab. Kerguelen's Land; on marine *Confervæ*.

G. truncatæ forma accedit, sed frustulis striatis ut in *Synedra Ulna*.

13. COCCONEIS, *Ehrb.*

1. Cocconeis *Placentula*, Ehrb. *Kütz.* p. 78. t. 28. f. 18. *c.*

Hab. Falkland Islands; on marine *Confervæ, Lesson.*

Found living in the fresh waters of Europe; also in Iceland, Mexico and the Oregon river, Chili, the Sandwich Islands, and in African (?) guano.

2. Cocconeis *Scutellum*, Ehrb. *Kütz. l. c.* t. 5. f. vi. 3–6.

Hab. Falkland Islands; on marine *Confervæ, Lesson.* Kerguelen's Land, also on marine *Conferva.*

Found living in the Atlantic, German, and Mediterranean Seas; on the coast of Iceland, in Peruvian guano and in volcanic tuff.

14. ACHNANTHES, *Ag.*

1. Achnanthes *pachypus*, *Kütz.* p. 76. t. 21. II. f. 3 and 29. f. 83.

Hab. Falkland Islands; on marine *Confervæ, Lesson.*

Recorded by Montagne to be a native of Callao, in Peru.

2. Achnanthes *longipes*, Ag. *Harv. Man. Alg. Brit.* p. 200.

Hab. Kerguelen's Land; on *Algæ*.

Specimen in a very bad state, but probably referable to this species. *Thwaites, MS.*

3. ACHNANTHES *turgens*, Ehrb. *l. c.*

HAB. Graham's Land; in mud from 270 fathoms.

15. LICHNOPHORA, *Ag.*

1. LICHNOPHORA *abbreviata*, Ag. Podosfenia abbreviata, *Ehrb. Infus.* p. 24. t. 18. f. 7.

HAB. Kerguelen's Land; in the sea.

Frustula omnino ut in exemplaribus ab Ehrenberg depictis, sed plura, stipiteque majore. *Thwaites, MS.*

Occurs as a parasite on *Ceramium rubrum*, in the Mediterranean Sea.

16. DIATOMA, *Ag.*

1. DIATOMA, n. sp.? frustulis angustissimis omnino aut fere lævissimis e dorso visis versus apices truncatos sub-dilatatis, e latere visis infra apices rotundatos constrictis.

HAB. Falkland Islands; on marine *Confervæ*.

D. elongata, Ag. simillima, differt frustulis nunquam aut vix striatis. *Thwaites, MS.*

17. COCCONEMA, *Ehrb.*

1. COCCONEMA *Lunula*, Ehrb. Cymbella maculata, *Kütz.* p. 79. t. 29. f. 32. *c.*

HAB. Falkland Islands; on marine *Confervæ*, *Lesson*. In a white pigment used by the Fuegians, *C. Darwin, Esq.*

Found throughout Europe, in Mexico and Chili, the Ægean Sea, the Oregon River, and in earth from Labrador. It also occurs in the white pigment used by the natives of Fuegia, and in atmospheric dust at the Cape de Verd Islands.

18. GOMPHONEMA, *Ag.*

1. GOMPHONEMA *clavatum*, Ehrb.; *Infus.* t. 18. f. vi.

HAB. Falkland Islands; on marine *Confervæ*, *Lesson*.

Throughout the European and North American shores, those of Iceland, the Marian and Sandwich Islands. Fossil in Virginia, *U.S.*

2. GOMPHONEMA *minutissimum*, Grev. *in Hook. Brit. Fl.* vol. ii. p. 209. G. curvatum, β. salinum, *Kütz.* p. 85. t. 8. f. 1.

HAB. Falkland Islands; on marine *Confervæ*; *Lesson*.

A British and common Atlantic species; found also in the Oregon territory and fossil in Virginia, U. S.

19. PINNULARIA, *Ehrb.*

1. PINNULARIA *borealis*, Ehrb.

HAB. Cockburn Island; in the soil of a Penguin rookery. In a pigment used by the Fuegians; *C. Darwin, Esq.*

Found also in Peruvian guano, in the *Mastodon* earth of the Plate river, and in the Cape de Verd atmospheric dust. Also in volcanic ashes from Ascension Island and Patagonia; in volcanic tuff of the Rhine and Phonolite stone.

2. PINNULARIA *peregrina* (?), Ehrb. Navicula peregrina, *Kütz.*

HAB. Cockburn Island; in the dirt of a Penguin rookery. Falkland Islands, *Lesson.*

The true *P. peregrina* is a native of the open ocean near the Brazilian coast, and has been found fossil in Virginia, U. S., and living at St. Domingo, Cuba, and Labrador.

20. NAVICULA, *Bory.*

1. NAVICULA *elliptica*, n. sp. Ehrb. *Schrift. Berl. Akad. May*, 1844.

HAB. Graham's Land; in mud from 270 fathoms.

2. NAVICULA *amphioxys*, Ehrb. *Kütz.* p. 91. t. 28. f. 37.

HAB. Falkland Islands; on marine *Confervæ*, *Lesson.*

This has also been collected living in Chili, Cayenne and Cuba, in various alluvial deposits, as the Brazils, Iceland, and in the natural paper of Silesia.

3. NAVICULA *Didyma* (?), Kütz.

HAB. Falkland Islands; on marine *Confervæ*, *Lesson.*

The true *N. Didyma* is a native of a salt-water Lagoon in Germany.

4. NAVICULA *Lyra*, Ehrb. *Kütz.* p. 94. t. 28. f. 55, *c.*

HAB. Falkland Islands; on marine *Confervæ*, *Lesson.*

5. NAVICULA *viridis*, Kütz. p. 97. t. 4. f. 18. and t. 30. f. 12.

HAB. Falkland Islands; abundant on marine *Confervæ*, *Lesson*, *J. D. H.*

One of the most widely dispersed of all *Diatomaceæ*, found alive in fresh waters of England, Scotland, and Ireland, in the natural paper of Silesia, in the Sandwich and Marian Islands, and West Tropical Africa, also in alluvial deposits of Iceland, Labrador and Peru.

21. STAUROPTERA, *Ehrb.*

1. STAUROPTERA *aspera*, Ehrb. *Infus. Amer.* p. 134. t. 1. *Kütz.* p. 106. t. 12, *c.*

HAB. Graham's Land; in mud from 270 fathoms. Falkland Islands, *Lesson.*

This has been collected in Norway, Spitzbergen, Iceland and Labrador, Mexico, Cuba, Peru; on the sand-hills of Patagonia, and in Peruvian guano.

2. STAUROPTERA *capitata*, n. sp. Ehrb. *Schrift. Berl. Akad. May*, 1844.

HAB. Cockburn Island; on the ground in a Penguin rookery.

22. AMPHORA, *Ehrb.*

1. AMPHORA *Libyca*, Ehrb. *Kütz.* p. 107. t. 29. f. 28, *c.*

HAB. Graham's Land; in mud from 270 fathoms.

Originally detected in the oasis of Sivah, and since found in various quarters of the globe, as Iceland, Labrador, the Oregon River and United States; at the Euphrates River, in African guano, and in the volcanic tuff of the Rhine.

2. AMPHORA *navicularis*, Ehrb.; *l. c.*

HAB. Falkland Islands; on marine *Confervæ*: *Lesson.*

23. ASTEROMPHALOS, N. G. *Ehrb.*

1. ASTEROMPHALOS *Hookeri*, Ehrb. *Schrift. Berl. Acad. May*, 1844. *cum ic.*

HAB. Victoria Barrier; in Pancake Ice and in mud from 190 fathoms. In a scum floating in the ocean, Lat. 64° S., Long. 160° W.

2. ASTEROMPHALOS *Rossii*, Ehrb. *l. c. cum ic.*

HAB. Victoria Barrier and Victoria Land; in Pancake Ice. In scum with the previous species.

3. ASTEROMPHALOS *Buchii*, Ehrb. *l. c. cum ic.*

HAB. Victoria Land and Barrier, with the *A. Rossii*, also in mud from 190 fathoms and in a floating scum with the two preceding species.

4. ASTEROMPHALOS *Beaumontii*, Ehrb. *l. c. cum ic.*

HAB. Victoria Barrier; in Pancake Ice.

5. ASTEROMPHALOS *Humboldtii*, Ehrb. *l. c. cum ic.*

HAB. Victoria Barrier; in Pancake Ice and in mud from 190 fathoms. In a floating scum with *A. Hookeri*.

6. ASTEROMPHALOS *Curieri*, Ehrb. *l. c. cum ic.*

HAB. Victoria Barrier; in Pancake Ice and in mud from 190 fathoms.

7. ASTEROMPHALOS *Darwinii*, Ehrb. *l. c. cum ic.*

HAB. In a scum floating in the ocean, in Lat. 64° S., Long. 160° W.

24. HALIOMYX, N. G. *Ehrb.*

1. HALIOMYX *scenarius*, Ehrb. *in Schrift. Berl. Akad. May*, 1844.

HAB. Victoria Barrier; in the Pancake Ice.

2. HALIOMYX *duodenarius*, Ehrb. *l. c.*

HAB. Victoria Barrier; in Pancake Ice. In the stomachs of *Salpæ* taken in Lat. 64°S., Long. 157° W.

25. HEMIAULUS, N. G. *Ehrb.*

1. HEMIAULUS *Antarcticus*, Ehrb. *in Schrift. Berl. Akad. May*, 1844.

HAB. Victoria Barrier and Victoria Land; in Pancake Ice and in mud from 190 fathoms. Open sea off Cape Horn, *Mr. Schayer* (Ehrb.).

2. HEMIAULUS? *obtusus*, Ehrb. *l. c.*

HAB. In a floating scum, Lat. 64°S., Long. 160° W. Graham's Land; in mud from 207 and 270 fathoms.

26. SYMBOLOPHORA, *Ehrb.*

1. SYMBOLOPHORA? *Microtrias*, n. sp. Ehrb.; *Schrift. Berl. Akad. May*, 1844.

HAB. Victoria Barrier; in Pancake Ice and in mud from 190 fathoms. Graham's Land; in mud from 270 fathoms.

2. SYMBOLOPHORA? *Tetras*, n. sp., Ehrb.; *l. c.*

HAB. Victoria Barrier; in Pancake Ice and in mud from 190 fathoms. Graham's Land; in mud from 270 fathoms.

3. SYMBOLOPHORA? *Pentas*, n. sp., Ehrb. *l. c.*

HAB. Victoria Barrier; in Pancake Ice and in mud from 190 fathoms. Graham's Land; in mud from 270 fathoms.

4. SYMBOLOPHORA? *Hexas*, n. sp., Ehrb. *l. c.*

HAB. Victoria Barrier; in Pancake Ice and in mud from 190 fathoms. Graham's Land; in mud from 270 fathoms.

27. CHÆTOCEROS, N. G. *Ehrb.*

1. CHÆTOCEROS *Dichaeta*, Ehrb.; *Schrift. Berl. Akad. May*, 1844.

HAB. In a scum floating on the surface of the ocean, in Lat. 64° S., Long. 160° W.

2. CHÆTOCEROS *Tetrachaeta*, Ehrb. *l. c.*

HAB. In a floating scum with the former species.

Two other species of this new genus have recently been discovered in the Bermuda Islands.

28. ANAULUS, N. G., *Ehrb.*

1. ANAULUS *scalaris*, Ehrb.; *Schrift. Berl. Akad. May*, 1844.

HAB. Graham's Land; in mud from 207 and 270 fathoms.

29. RHAPHONEIS, N. G. *Ehrb.*

1. RHAPHONEIS *fasciolata*, Ehrb.; *l. c.*

HAB. Graham's Land, in mud from 207 and 270 fathoms.

2. RHAPHONEIS *scutellum*, Ehrb.; *l. c.*

HAB. Cockburn Island; in the dirt of a Penguin rookery.

30. PODOSPHENIA, *Ehrb.*

1. PODOSPHENIA *cuneata*, Ehrb.; *Infus.* t. 17. f. viii. *Kutz. Kieselsch. Diat.* p. 121. t. 9. f. 13. 1–4.

HAB. Graham's Land; in mud from 270 fathoms.

Also found in the Atlantic, German, and Mediterranean seas, and in Peruvian guano.

31. GRAMMATOPHORA, *Ehrb.*

1. GRAMMATOPHORA *parallela*, Ehrb.

HAB. Graham's Land; in mud from 207 and 270 fathoms.

Found fossil in Sicily, Oran and Virginia, U.S.

2. GRAMMATOPHORA *Africana*, Ehrb.; *Kütz.* p. 129.

HAB. Graham's Land; in mud from 270 fathoms.

Exists also in the Mediterranean Sea and German Ocean; and fossil in Sicily, Oran, and Virginia, U.S., and in Peruvian and African? guano.

3. GRAMMATOPHORA *serpentina*, n. sp., Ehrb.; *Schrift, Berl. Akad. May*, 1844. (*non Kütz.*)

HAB. Graham's Land; in mud from 270 fathoms.

4. GRAMMATOPHORA *Oceanica*, Ehrb. G. marina, *Kütz.* Distoma marinum, *Lyngb. Harv. Brit. Alg.* p. 201.

HAB. Falkland Islands; on marine *Confervæ*: *Lesson.*

Abundant on the Atlantic shores of both the Old and New World, and in the Mediterranean Sea. Found fossil in Virginia, U.S., and Peruvian guano; also in the atmospheric dust of the Cape de Verds.

5. GRAMMATOPHORA *stricta*, Ehrb.; *Kütz.* p. 129. t. 29. f. 76. *c.*

HAB. Falkland Islands; on marine *Confervæ*: *Lesson.*

This occurs in Peruvian guano, and in deposits at Vera Cruz, in Mexico, and North America.

32. COSCINODISCUS, *Ehrb.*

1. COSCINODISCUS? *actinochilus*, n. sp., Ehrb.; *Schrift. Berl. Akad. May*, 1844.

HAB. Victoria Barrier; in Pancake Ice.

2. COSCINODISCUS *Apollinis*, n. sp., Ehrb.; *l. c.*

HAB. Victoria Barrier; in Pancake Ice and in mud from 190 fathoms. Stomachs of *Salpæ*, in Lat. 64° S., Long. 157° W. Graham's Land; in mud from 207 and 270 fathoms.

3. COSCINODISCUS *cingulatus*, n. sp., Ehrb.; *l. c.*

HAB. Victoria Barrier; in Pancake Ice. Graham's Land; in stomachs of *Salpæ* with the preceding.

4. COSCINODISCUS? *gemmifer*, n. sp., Ehrb.; *l. c.*

HAB. Victoria Land; in mud from 190 fathoms, and in Pancake Ice. Graham's Land; in the stomachs of *Salpæ* with the preceding.

This species has also been found in the Bermuda Islands, and fossil at Oran and Sicily.

5. Coscinodiscus *Lunæ*, n. sp., Ehrb.; *l. c.*

Hab. Victoria Barrier and Land; in Pancake Ice and in mud from 190 fathoms. In stomachs of *Salpæ*, taken in Lat. 66° S., Long. 157° W. Graham's Land; in mud from 207 fathoms.

6. Coscinodiscus *eccentricus*, Ehrb.; *Leb. Kr.* p. 66. *Kütz. Kiesel. Bacill.* p. 131. t. 1. f 9.

Hab. Victoria Barrier; in Pancake Ice.

Found on the European shores of the Atlantic, and at Vera Cruz; in deposits at Oran, Bermuda, Virginia, U.S., and in Peruvian and African? guano.

7. Coscinodiscus *limbatus*, Ehrb.; *Schrift. Berl. Akad.* 1840. *Kütz. l. c.* p. 131.

Hab. Victoria Barrier; in mud at 190 fathoms.

Also found in the Ægean sea.

8. Coscinodiscus *lineatus*, Kütz. p. 131. t. 1. f. 10.

Hab. Victoria Barrier and Land; in Pancake and Brash Ice, also in mud from 190 fathoms. Stomachs of *Salpæ* within the Antarctic circle. In a floating scum Lat. 64° S., Long. 160° W. Graham's Land; in mud from 270 fathoms.

A very widely dispersed species, inhabiting Melville Island, Sicily, Virginia, Maryland, and Peruvian guano.

9. Coscinodiscus *Oculus-Iridis*, Ehrb.; *Leb. Kr. l. c. Kütz. l. c.* p. 132.

Hab. Victoria Land and Barrier; in Pancake Ice. Graham's Land; in mud from 270 fathoms.

Found in the Atlantic Ocean, Bermudas, Mediterranean Sea, and in Peruvian guano.

10. Coscinodiscus *radiolatus*, Ehrb.; *Kütz.* p. 132. t. 1. f. 18.

Hab. Victoria Barrier and Land; in Pancake Ice, and in mud from 190 fathoms. Graham's Land; in mud from 207 fathoms.

This occurs in the Mediterranean Sea, as also in deposits at Oran, Sicily, the Bermudas, the United States, Peru and Cuba.

11. Coscinodiscus *subtilis*, Ehrb.; *Schrift. Berl. Akad. Feb.* 1844. *Kütz. l. c.* p. 132. t. 1. f. 16.

Hab. Victoria Land and Barrier; in Pancake Ice. Stomachs of *Salpæ* and oceanic scums within the Antarctic circle. Graham's Land; in mud from 270 fathoms.

Previously found in deposits only, as in Sicily, the Bermudas, the United States, the *Mastodon* earth of the Plate river, Vera Cruz, and Peruvian and African guano.

12. Coscinodiscus *velatus*, Ehrb.; *Schrift. Berl. Akad. Feb.* 1844.

Hab. Victoria Barrier; in Pancake Ice. Graham's Land; in mud from 207 fathoms.

Known previously only in the fossil deposits of Virginia and Maryland, U.S.

33. FLUSTRELLA, *Ehrb.*

1. Flustrella *concentrica*, Ehrb.; *Schrift. Berl. Akad. Feb.* 1844.

Hab. Victoria Barrier; in Pancake Ice. Graham's Land; in mud from 270 fathoms.

In a fossil state this species occurs in Sicily, Oran, the Ægean Sea, Maryland, U.S, and in the Bermuda Islands.

34. ACTINOCYCLUS, *Ehrb.*

1. ACTINOCYCLUS *senarius*, Ehrb.; *Schrift. Berl. Akad. June*, 1844.

HAB. Falkland Islands; on marine *Conferva*: *Lesson*.

35. ACTINOPTYCHUS, *Ehrb.*

1. ACTINOPTYCHUS *biternarius*, Ehrb.; *l. c.*

HAB. Victoria Barrier; in Pancake Ice.

Also occurs in tertiary deposits in Virginia and Maryland, U.S, and in the Bermuda Islands.

36. DISCOPLEA, *Ehrb.*

1. DISCOPLEA *Rota*, n. sp., Ehrb.; *Schrift. Berl. Akad. May*, 1844.

HAB. Graham's Land; in mud from 270 fathoms.

2. DISCOPLEA *Rotula*, n. sp., Ehrb.; *l. c.*

HAB. Graham's Land; in mud from 270 fathoms.

37. LITHOBOTRYS, *Ehrb.*

1. LITHOBOTRYS? *denticulata*, n. sp., Ehrb.; *l. c.*

HAB. Victoria Barrier; in Pancake Ice and in mud from 190 fathoms. In a floating scum, Lat. 64° S., Long. 160° W.

The only other species of this genus is a Virginian fossil.

38. LITHOCAMPE, *Ehrb.*

1. LITHOCAMPE *Australis*, n. sp., Ehrb.; *Schrift. Berl. Akad. May*, 1844.

HAB. Victoria Barrier; in Pancake Ice.

This genus was known only as a fossil, occurring in the United States and the Mediterranean Sea, previous to the detection of this and the following species.

LITHOCAMPE *Antarctica*, n. sp., Ehrb.; *l. c.*

HAB. Graham's Land; in mud from 270 fathoms.

39. TRIAULACIAS, N.G., *Ehrb.*

1. TRIAULACIAS *triquetra*, Ehrb.; *Schrift. Berl. Akad. May*, 1844.

HAB. Victoria Barrier; in mud from 190 fathoms.

40. BIDDULPHIA, *Gray.*

1. BIDDULPHIA *ursina*. n. sp., Ehrb.; *l. c.*

HAB. Graham's Land; Gulf of Erebus and Terror, in mud 207 and 270 fathoms.

41. ZYGOCEROS, *Ehrb.*

1. ZYGOCEROS *Australis*, n. sp., Ehrb.; *l. c.*

HAB. Victoria Barrier; in Pancake Ice. Graham's Land; Gulf of Erebus and Terror, in mud at 207 fathoms.

42. DENTICELLA, *Ehrb.*

1. DENTICELLA *lævis*, n. sp., Ehrb.; *l. c.*

HAB. Graham's Land; Gulf of Erebus and Terror, in mud at 270 fathoms.

43. MESOCENA, *Ehrb.*

1. MESOCENA? *Spongolithis*, n. sp., Ehrb.; *l. c.*

HAB. Victoria Barrier; in mud from 190 fathoms. Graham's Land; in mud at 270 fathoms.

44. ACTINISCUS, *Ehrb.*

1. ACTINISCUS *lanceearius*, n. sp., Ehrb.; *l. c.*

HAB. Open ocean, Lat. 66° S., Long. 157° W., in the stomach of a *Salpa*.

45. DICTYOCHA, *Ehrb.*

1. DICTYOCHA *aculeata*, Ehrb.; *Leb. Kr.* p. 68. *Kütz. Kiesel. Bacill.* p. 140.

HAB. Victoria Land and Barrier; in Pancake Ice. In the stomachs of *Salpæ*, Lat. 66° S., Long. 157 W. Entangled in a surface scum, Lat. 64° S., Long. 160° W.

Found living in the North Sea, fossil in Sicily, the Ægean, North Africa, and Virginia, U.S.

2. DICTYOCHA *binoculus*, Ehrb.; *Schrift. Akad. Berl. May*, 1844.

HAB. Victoria Barrier; in Pancake Ice. Entangled in a floating scum, Lat. 64° S., Long. 160° W.

Also occurs in tertiary deposits in the Ægean Sea.

3. DICTYOCHA *biternaria*, Ehrb.; *l. c.*

HAB. Victoria Barrier; in Pancake Ice.

4. DICTYOCHA *Epiodon*, Ehrb.; *Schrift. Berl. Akad. Feb.* 1844.

HAB. Victoria Barrier; in Pancake Ice.

Originally described from specimens occurring in a tertiary deposit in Virginia, U.S., also found in Peruvian guano.

5. DICTYOCHA *octonaria*, Ehrb.; *Schrift. Berl. Akad. May*, 1844.

HAB. Victoria Barrier; in Pancake Ice.

6. DICTYOCHA *Ornamentum*, Ehrb.; *l. c. Feb.* 1844.

HAB. Victoria Barrier; in Pancake Ice. In a floating scum, Lat. 64° S., Long. 160° W.

Tertiary deposits of Sicily contain this species.

7. DICTYOCHA *septenaria*, Ehrb.; *l. c.*

HAB. Victoria Barrier; in Pancake Ice, and in mud from 190 fathoms.

Previously found fossil in the tertiary deposits of Oran.

8. DICTYOCHA *Speculum*, Ehrb.; *Kutz. Kiesel. Bacill.* p. 140. t. 21. f. 22. c.

HAB. Victoria Barrier; in Pancake Ice, and in mud at 190 fathoms. In the stomachs of *Salpæ*, Lat. 66° S., Long. 157° W. In a floating scum, Lat. 64° S., Long. 160° W.

A widely distributed species, found living in the North Sea and Atlantic, fossil at North Africa, Greece, and Sicily, and in Maryland, U.S.

46. RHIZOSOLENIA, *Ehrb.*

1. RHIZOSOLENIA *Calyptra*, n. sp., Ehrb.; *Schrift. Berl. Akad. May*, 1844.

HAB. Victoria Barrier; in Pancake Ice. Graham's Land; Gulf of Erebus and Terror, in mud from 270 fathoms.

2. RHIZOSOLENIA *Ornithoglossa*, n. sp., Ehrb.; *l. c.*

HAB., Victoria Barrier; in Pancake Ice, and in mud from 190 fathoms. Graham's Land; Gulf of Erebus and Terror, in mud at 270 fathoms.

Both these species have recently been detected in the Bermuda Islands.

LVII. DESMIDIEÆ, *auct. recent.*

1. ARTHRODESMUS, *Ehrb.*

1. ARTHRODESMUS *Tænia*, Ehrb.; *Schrift. Berl. Akad. June*, 1841.

HAB. Falkland Islands; on marine *Confervæ*: *Lesson.*

LVIII. LICHENES,* *L.*

1. USNEA, *Ach.*

1. USNEA *melaxantha*, Ach.; *Lich. Univ.* p. 618. *Syn. Meth.* p. 303. *Brown, Plant. Spits. in Scoresby Voy.* vol. i. *App.* p. 76. *Kunth. Synops.* vol. i. p. 36. *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 596.

* Since the publication of the "*Lichenes Antarctici*" in the 'London Journal of Botany,' and of those contained in the first part of this work, I have had the advantage of re-studying all the species with my friend, the Rev. Churchill Babington, whose profound knowledge of the forms of this difficult order, and acquaintance with the most recent writings of European Lichenologists, have been most liberally brought to bear upon this part of the 'Flora Antarctica.'

Bory in Duperrey, Voy. Bot. p. 240. *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 201. U. sphacelata, *Brown, in Parry, 1st Voy. App.* p. 307. *Hook. Plant. Arct. in Linn. Soc. Trans.* vol. xiv. p. 384. *Bot. Miscell.* vol. i. p. 15. t. 12. U. fasciata, *Torrey, in Silliman Journ.* vol. vi. *cum ic. Hook. Bot. Miscell.* vol. i. p. 14. t. 11. U. aurantiaco-atra, *D'Urv. in Mém. Soc. Linn. Paris*, vol. iv. p. 596. Cornicularia flavicans, *Persoon, in Freyc. Voy. Bot.* p. 210. Lichen aurantiaco-ater, *Jacq. Miscell. (fid. Acharius).*

Var. *α. Acharii*; robusta, thallo scabrido, apotheciorum marginibus nudis.—U. melaxantha, *Ach. l. c.*

Var. *β. Jacquinii*; robusta, thallo lævi.—Lichen aurantiaco-ater, *Jacq. l. c.*

Var. *γ. fasciata*; robusta, thallo tuberculato, ramulis pluries divisis capillaceo-attenuatis, apotheciis extus tuberculatis.—U. fasciata, *Torrey, l. c.*

Var. *δ. sphacelata*; gracilis, thallo lævi pruinoso v. tuberculato fruticuliformi ramosissimo, ramulis capillaribus.—U. sphacelata, *Brown, l. c.*

Hab. Throughout Tierra del Fuego and the Falkland Islands; on exposed rocks, from the sea to 2,000 feet, most abundant. New South Shetlands; *Webster, Dr. Eights.*

Perhaps the handsomest of all Lichens, whether we regard its colour, stature, or mode of growth, and yet so variable in all these points, that the extremes are scarcely recognizable. In size it varies from a few lines or an inch, with capillary stem and branches, to four inches, with a woody stem a quarter of an inch in diameter. The colour is sometimes wholly (especially in var. δ) black, at others uniformly yellow, but most frequently banded with black, especially towards the apices of the ramuli. Old specimens turn tawny red, as do all when, after being dried, they are soaked in warm water. The apothecia are yellow, grey or deep black. The surface of both the stems and the back of the apothecia is more or less tuberculated or pruinose, smooth or much wrinkled, naked or more or less covered with longer or shorter horizontal terete acuminated ramuli. The apothecia vary exceedingly in breadth, from two or three lines to almost half an inch; their margins are smooth, tuberculated or beset with branching ramuli; they are generally terminal, but the younger appear lateral when subtended by a branch.

It is in the Falkland Islands that this species most abounds, covering the surface of the Quartz rocks with a miniature forest, seeking the most exposed situations, and there attaining its greatest size and beauty. In these Islands, too, all the five varieties I have enumerated may be collected within a few feet of one another, and so associated as to leave little doubt that they are states depending on age, rather than marked races. The var. δ. especially, is certainly only an undeveloped state, which does not bear soredia in the Antarctic regions; or apothecia either in Tasmania or in the Arctic latitudes, where soredia are produced.

The structure of the stem of this, and probably of some other Lichens, presents a marked analogy with that of the Laminarioid Algæ described at p. 460. The central thread is very large, composed of concentric layers of dense, horny, red cellular tissue, gradually passing into a soft white pith, enclosing a cavity. Around this horny thread, whose edges are sharply defined, are arranged concentric layers of a spongy cellular substance, which again are enclosed in a cortical layer, as dense as the central, and to which the yellow and black hues of this Lichen are always confined. Thus, proceeding from the circumference, there is—1st, a horny, coloured, cortical layer, answering to what is called the cortical layer of *Lessonia*, and to which, in that plant also, the coloured chromule is chiefly confined; 2nd, the layers of intermediate lax tissue, successively deposited, though much more obscurely so than in *Lessonia*; 3rd, the central thread of *Usnea* which is a stout axis, answering to the elliptic core of *Lessonia*, but in this Lichen becoming so lax towards the centre as to enclose a cavity in the older stems.

We have never observed spores in any specimens of this Lichen, from whatever place collected, though we have examined very many apothecia in a live state, as well as after being dried, both young and old, and of all colours, both black, grey, or yellow. Dr. Montagne (Voy. au Pole Sud, l. c.) has been similarly unsuccessful.

The range of this Lichen is very wide. It is found in the Arctic regions of both the New and Old World; on the Andes under the Equator, at an elevation of 11,000 feet; on the mountains of Tasmania at 3,000 and 4,000 feet; in Chili, the Falkland Islands, Fuegia, and the New South Shetlands. Now it is worthy of notice, that in none of the Arctic, the equatorial, or south temperate latitudes, does this plant produce apothecia; and that in the Antarctic, where alone apothecia have hitherto been found, these are always barren. Further it is remarkable, that this Lichen grows only where no other *Usnea* is found in fruit; and is, perhaps, the only species of that genus which universally inhabits rocks; circumstances which, taken together with its increasing in luxuriance with the exposure it is subjected to, suggests the possibility of its being a state of some other species of this highly variable and universally diffused genus, and that, distinct as the Antarctic specimens of *U. melaxantha* appear, they may owe their characters to the climate, for there is very great difficulty in defining the species so as to exclude states of *U. florida*. In South Chili, where the *U. florida* commences (proceeding southwards), we have specimens of *U. cervicina*, Mont.; which are, perhaps, states of *U. melaxantha*. Again, in Tasmania I am unable to distinguish some specimens of *U. barbata* and *U. florida* (F), which grow on the trunks of dead trees in the higher parts of the island, from the *U. melaxantha* of the summit of Mount Wellington and other elevated mountains.

2. Usnea *Taylori*, Hook. fil.; thallo erecto lævi pallide citrino dichotomo, ramis erectis gemmis papulosis sparsis, apotheciis terminalibus majoribus demum planiusculis, disco atro, margine integerrimo, dorso lævigato. *Lond. Journ. Bot.* vol. iii. p. 657. (Tab. CXCV. Fig. I.)

Hab. Kerguelen's Land; on rocks from 100 to 1,200 feet of elevation: very abundant.

U. melaxanthæ simillima, differt præcipue thallo lævi polito et colore lætiore nitente.

So closely allied to the *U. melaxantha*, that I advance this species with much hesitation. None of the Kerguelen's Land specimens exactly tally with any of its congeners from other Antarctic localities, but approach them very nearly indeed; so much so, that the present should be perhaps regarded as a permanent variety only. If it be so, it is singular that it is the only one in which asci have hitherto been detected; these are abundant in all the apothecia, and vary much in size, in the form of their contained spores, and in the arrangement or grouping of these, as shown in the accompanying plate.

This is by far the most handsome vegetable production of Kerguelen's Land.

Plate CXCV. *Fig.* I.—1, young, and 2, full grown plants of the natural size; 3, vertical section of young and 4, of old apothecium; 5, lamina proligera, with asci and spores:—very highly *magnified*.

3. Usnea *barbata*, Ach.; *Lich. Univ.* p. 624. *Fl. Antarct.* Pt. 1. p. 194.

Var. *c. articulata*, Ach.; *Syn. Meth.* p. 306.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; abundant on the stems of *Empetrum* and in heathy and rocky places. Var *c.* Falkland Islands, *Mr. Wright*. Hermite Island, Cape Horn; top of Mount Foster and Kater's Peak, &c.

Also a native of Lord Auckland's group, Campbell's Island, and Tasmania. In Europe it is found as far north as Lapland.

4. Usnea *plicata*, Ach.; *Lich. Univ.* p. 622. *Fl. Antarct.* Pt. 1. p. 194.

Hab. Falkland Islands, and Hermite Island, Cape Horn; on twigs of bushes, &c. Strait of Magalhaens, *Jacquinot*.

A more Arctic and Antarctic plant than the following, reaching Cape Horn in 57° S., and the shores of the Polar Sea in Arctic America, or 69° N., beyond which it is succeeded by the *U. melaxantha* in both extremities of the globe.

5. USNEA *florida*, Ach.; *Lich. Univ.* p. 304. *Engl. Bot.* t. 872.

HAB. Chonos Archipelago, on trees; *C. Darwin, Esq.*

A plant evidently impatient of perennial cold; inhabiting none of the Antarctic islands south of New Zealand and Tasmania in the Old World, nor of the Chonos Archipelago in the New. In the northern regions, again, it does not pass the wooded regions (68° N.), in America, or reach Lapland in Europe.

2. EVERNIA, *Ach.*

1. EVERNIA *Magellanica*, Mont.; *in Voy. au Pole Sud, Bot. Crypt.* p. 198.

HAB. Strait of Magalhaens; *D'Urville* and *Jacquinot.*

A very beautiful and distinct species, which I have seen from no other locality than that indicated by Montagne.

3. RAMALINA, *Ach.*

1. RAMALINA *scopulorum*, Ach.; *Lich. Univ.* p. 604. *Engl. Bot.* t. 688.

Var. *α.* thallo 1–1½ pollicari lineari rigido polito utrinque glabro, apotheciis plurimis primum concavis demum convexis marginibus reflexis. R. verrucosa, *nob. in Lond. Journ. Bot.* vol. iii. p. 655.

Var. *β.* thallo fastigiato sub 2-pollicari cartilagineo pallide stramineo lineari v. lineari-obovato laciniato polito obscure lacunoso hic illic terebrato apicibus sub-acutis, apotheciis nullis.

Var. *γ.* thallo elongato 2–6-unciali rigide cartilagineo planiusculo v. lacunoso parce pruinoso pertuso laciniis ½ unc. latis lobulis acutis, apotheciis nullis.

Var. *δ.* thallo flavo dense fastigiato lineari-ligulato 1–5-unciali laciniis flaccidis nunc pertusis pluries divisis acuminatis glabratis punctisve pruinosis sparsis, apotheciis nullis.

Var. *ε.* omnia varietatis *δ.*, sed rigida, apotheciis apices versus laciniarum confertis corrugatis plerisque monstrosis.

Var. *ζ. terebrata*; thallo elongato 8 unc. ad pedalem flaccido lacunoso et corrugato pertuso pruinoso v. glabrato, margine integerrimo eroso lobulato v. prolifero, apotheciis nullis:—inter var. *γ.* and *δ.* media sed statura proceriore. R. terebrata, *nob. in Lond. Journ. Bot.* vol. iii. p. 654.

Var. *η. truncata*; fastigiata, thallo cuneato in lacinias breves truncatas flabellatim expanso laciniis pertusis pruinosis griseis apicibus involutis:—an forma incompleta?

HAB. Var. *α.* Dry quartz rocks, Falkland Islands. Var. *β.* and *γ.* Dry rocks, chiefly of clay slate, Falkland Islands. Var. *δ.* Falkland Islands and Cape Horn; on rocks near the sea. Var. *ε.* Dry granite rocks, Cape Horn; Kerguelen's Land, *Anderson.* Var. *ζ.* Falkland Islands; on moist exposed rocks, near the sea, most abundant. Var. *η.* with var. *ζ.* but in more shady places.

On these varieties, or rather forms, we are enabled to offer the following observations:—

The var. *α.* is exactly the English *R. scopulorum*, and the only one which produces perfect fruit in the Falkland Islands. Var. *β.* is found in New Zealand, and in fruit; also abundantly in Brazil. Var. *γ.* and *ζ.* are scarcely distinguishable from *R. fraxinea* of Norfolk: small specimens exactly resemble *R. membranacea*, Laurer, of New Holland; it is a very common form in the Southern Hemisphere. Var. *δ.* is very similar to the Uraguay *R. prolifera*, of Taylor. Var. *ε.* is a small form of a Chilian variety. The var. *η.* inhabits Chiloe, and approaches near to *R. pollinaria.*

Dissimilar though the states of this plant here brought together are, no one who has collected them together can doubt their all belonging to one species, which, however, seldom fruits.

M. Fries states his conviction of the probability that all the European *Ramalinæ* are varieties of one species, an opinion in which we certainly concur, and we would further add many of the Exotic (except *R. inanis*) to it. The above varieties certainly all belong to one species, as abundant in Cape Horn and Fuegia as the ordinary states of *R. scopulorum* are in Europe, and, however unlike some of these forms are to the English plant of that name, the one called a here, and which is the only one that fruits, is in no way to be distinguished from that plant. Considering how plastic the Lichens are in form and texture, and how amenable to the different climatal conditions, it must be admitted that if the *R. scopulorum* of England were to inhabit the maritime rocks of the Falklands, its aspect would be changed; the humidity of the atmosphere near the sea of these islands, being much greater than that of similar situations in our own country. Again, the locality inhabited by the var. *a.*, namely, rocks at a considerable elevation and distance from the ocean, possesses a climate more assimilated to the British habitats of *R. scopulorum* than are the moist rocks at a lower level, and hence it is only natural to suppose, that there the Falkland Island form would assume the English. Lastly, the universally acknowledged difficulty of defining the European species, and the singular abundance of forms of the genus exactly similar to these in all parts of the world, between Lat. 60° N. and 57° S., together with the fact that many other Lichens are equally protean and widely distributed, are all arguments in favour of the Antarctic species having a common origin with other forms of the genus inhabiting the Arctic, Temperate, and Tropical regions.

The genus *Ramalina*, in the Arctic zone, attains the parallel of 69°, on the shores of the Polar Sea in North America, and of Lapland in Europe.

4. CETRARIA, *Ach.*

1. CETRARIA *Islandica*, Ach.; *Lich. Univ.* p. 509. *Engl. Bot.* t. 1330.

HAB. Hermite Island, Cape Horn; amongst moss on the tops of mountains only, 1,500–1,700 feet, barren.

One of the most Arctic of plants, having been collected on Ross Islet, the northernmost known land in Europe (81° N.), and in Melville Island (76°), on the limits of Arctic American vegetation. It inhabits the level of the ocean only within the Arctic circle, or in the extremely cold plains of Central Russia (as Moscow, 55° N.) Dahuria in Asia, 50° N., and in North America (as Labrador, 55° N.); thence, in progressing south, it ascends; attaining the tops of our Scotch Alps, 4,000 feet (56° N.), about 10,000 feet on the Swiss Alps (46° N.), 9,000 feet on the top of the Pyrenees, and 4,000 feet on the mountains of North Carolina and Virginia (in 36° N.). The last locality is the lowest latitude it attains in the Northern Hemisphere; in the Southern it re-appears only on the extreme point of America, and there is confined to the pinnacles of the very highest mountains. There is perhaps no vegetable common to both hemispheres more typical of extreme cold than this Lichen, which is further interesting from being the reputed cure for consumption, and the only plant of that order extensively used in medicine.

2. CETRARIA *glauca*, Ach.; *Lich. Univ.* p. 509. *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 194.

HAB. Hermite Island, Cape Horn; top of Mount Kater, 1,700 feet; on rocks, sparingly. Straits of Magalhaens, *D'Urville* and *Jacquinot*.

This, again, is an instance of the re-appearance of a Northern and Arctic Lichen in the Southern Hemisphere only under Antarctic skies. The *C. glauca* finds its principal parallel in Scotland, central and northern Europe, and sub-arctic America, wandering as far south as the Swiss Alps and mountains of the Canary Islands. It is not nearly so Arctic as the *C. Islandica*, not being found in Spitzbergen or Melville Island, or, according to Richardson anywhere to the northward of 54° in Arctic America. Wahlenberg states it to be rare in Lapland.

3. Cetraria *sepincola*, Ach.; *Lich. Univ.* p. 507. *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 195.

Hab. Strait of Magalhaens, on bark of *Berberis ilicifolia*; *M. Jacquinot.*

4. Cetraria *aculeata*, Fries, *Lich. Europ.* p. 35. *Mont. l. c.* p. 194. Cornicularia aculeata, *Ach. Lich. Univ.* p. 612.

Hab. Hermite Island, Cape Horn; on the summit of Kater's peak, and other mountains. Falkland Islands, *Gaudichaud, &c.*; but not common. Strait of Magalhaens; *D'Urville and Jacquinot.*

A very Arctic plant, inhabiting Melville Island in Arctic America, and Lapland in Europe; in the latter continent it extends as far south as the Alps and Pyrenees, and to the Canary Islands in the Atlantic Ocean.

5. NEPHROMA, *Ach.*

1. Nephroma *polaris*, Ach.; *Lich. Univ.* p. 523. N. arctica, *Mont. in Voy. au Pole Sud, Bot Crypt.* p. 192.

Hab. Hermite Island, Cape Horn; moist exposed places on the margins of the woods bordering the sea, abundant. Strait of Magalhaens; *MM. Hombron* and *Jacquinot.*

The most magnificent of Lichens, whether we regard the size of the thallus, which often is a foot and upwards across, the general aspect, or the size and beautiful colour of the frond and copious apothecia. Its European range is very northern, being confined to Scandinavia, reaching Lapland but not the islands beyond, nor inhabiting any countries south of the Baltic. In North America it ranges over the wooded regions and barren lands, 54°–69°, and to the west of the Rocky Mountains descends to Fort Vancouver, in Lat. 46° N.

2. Nephroma *cellulosa*, Ach.; *Lich. Univ.* p. 523.

Hab. Staten Land; *Menzies* (*in Hook. Herb.*)

A very much smaller species than the former, approaching very closely to the *N. resupinata* of Europe. It also inhabits Juan Fernandez and Tasmania.

6. PELTIDEA, *Ach.*

1. Peltidea *polydactyla*, Ach.; *Lich. Univ.* p. 517. *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 193.

Hab. Strait of Magalhaens; *MM. Hombron* and *Jacquinot.*

Very abundant in Tasmania and New Zealand, also found in Lord Auckland's group and Campbell's Island. In Europe, it ranges from Switzerland to Sweden and Norway; in America, from Mexico to Sitka, but does not proceed so far north on the east of the Rocky Mountains; it also inhabits the West Indies, Colombia, the Cape of Good Hope, and other warm climates. Altogether it is a plant which does not shun the cold so markedly as do either of the following species, for it (the var. *scutata*) is also found as far as the northern limits of the forest regions of Arctic America.

2. Peltidea *canina*, Ach.? *Lich. Univ.* p. 517. *Engl. Bot.* t. 2299.

Hab. Falkland Islands; on tufts of *Bolax glebaria*, rare.

In the Southern Hemisphere the *P. canina* has been found in Juan Fernandez only. Its range in the Northern is very wide, commencing in Mexico it is dispersed as far north as Canada on the east coast, and Sitka on the west. In Europe it is frequent from the Alps to Lapland, but does not inhabit the Arctic Island of Spitzbergen in Europe, or the shores of the Polar Sea and Islands beyond in America, where the *P. aphthosa* abounds, a species not hitherto found in the Antarctic regions. The Falkland Island specimens are in a very imperfect state.

3. PELTIDEA *venosa*, Ach.? *Lich. Univ.* p. 514. *Engl. Bot.* t. 887.

HAB. Kerguelen's Land; on tufts of moss on the hills.

The specimens are in a very unsatisfactory state, being stunted and barren. They, however, closely resemble dwarf Scotch and Arctic individuals of the plant in question, differing chiefly in the smoother thallus and occasional buds. The range of the species is not wide: Lapland and Switzerland are its Northern and Southern European limits. In North America it inhabits the United States, Canada, and the Columbia river. Kerguelen's Land is the only recorded habitat in the Southern Hemisphere.

4. PELTIDEA *horizontalis*, Ach.; *Lich. Univ.* p. 515. *Engl. Bot.* t. 883.

HAB. Christmas Harbour, Kerguelen's Land; on wet moss, abundant.

Both in characters and in locality the specimens agree with the European *P. horizontalis*.

This, again, has not been observed elsewhere in the Southern Hemisphere. In the Northern it is confined to the temperate latitudes, both of Europe and North America, ranging in the latter from the middle United States to Canada, and in Europe from Lapland to Switzerland and the Pyrenees, where it is the only species of the genus inhabiting the top of the Pic du Midi (9,000 feet).

7. STICTA, *Ach.*

1. STICTA *crocata*, Linn.; *Engl. Bot. t.* 2110. S. citrina, *Pers. in Freyc. Voy. Bot.* p. 201. S. fuliginosa, *nobis in Lond. Journ. Bot.* vol. iii. p. 646.

Var. *β. gilva*, Ach. *Synops. Lich.* p. 232. S. impressa, *quoad exempl. Falkland. nobis in Lond. Journ. Bot. l. c.* S. Gaudichaudii, *Delise, Monogr. Stict.* p. 80. t. vii. f. 23. *Bory in Duperrey Voy. Bot.* p. 236.

HAB. Strait of Magalhaens; *D'Urville, Hombron.* Hermite Island, Cape Horn, and the Falkland Islands; both varieties on rocks and twigs of shrubs, near the sea.

This species is also found on the west coast of South America, in Tasmania, Swan River, and the Cape of Good Hope. In the Northern Hemisphere it inhabits the United States and West Indian Islands, the Sandwich group, Great Britain and Ireland, attaining its northern limit at Inverary in Scotland (Lat. 56° N.), which singularly coincides with the latitude of the most southern habitat, namely, Cape Horn. The var. *gilva* is certainly only a variety, without the pulverulent lines on the upper surface. The rimæ are sometimes white in this species, when it becomes exceedingly difficult to distinguish it from some of its congeners.

2. STICTA *endochrysa*, Delise; thallo late expanso cartilagineo glauco intus aurato glabro lobato, lobis rotundatis subintegerrimis marginibus gemmis confertis auratis obsitis super cæsiis flavo-virescentibusve subter rufo-flavis glabratis, cyphellis parvis prominulis citrinis, apotheciis sparsis concavis stipitatis, disco atro-rufo, margine elevato inflexo primum lanuginoso demum glabrato et crenulato. S. endochrysa, *Delise, Monogr.* p. 43. t. 1. f. 1. S. D'Urvillei, *Delise, l. c.* p. 170. S. flavicans, *nobis in Lond. Journ. Bot.* vol. iii. p. 648. S. ochracea, *Menzies, MSS. in Hb. Hook.* Parmelia pubescens, *Pers. in Freyc. Voy. Bot.* p. 199. (TAB. CXCV. Fig. II.)

HAB. Hermite Island, Cape Horn; from the sea to the tops of mountains, abundant on rocks and trees. Falkland Islands; very abundant. Staten Land; *Menzies.*

Thallus late expansus, pedalis et ultra, glaucescens. *Lobi* lati, obscure undulati, flavido-marginati v. immarginati; marginibus isidiophoris granulis subfoliaceis dense onustis, rarius denudatis et crenatis; subter lacunosi v. plani, medium versus fusco-flavidi parce tomentosi, ad apices pallidiores et glabrati. *Cyphellæ* plurimæ, papillæformes, rimæque thalli citrinæ. *Apothecia* sparsa, 2–4 lin. lata.

Variat colore superficiei superioris flavido v. cæsio, nunc glauco-virescente; foliis planis v. sublacunosis; marginibus loborum planis v. elevatis, lævibus v. crispatis, nudis v. granulis corniculatis dense obsitis.

This, and the *Nephroma arctica*, are the most noble foliaceous Lichens of the Antarctic regions. The present is particularly so, the brightness of its golden thallus, and its great abundance on the sea-ward edges of the Fuegian forest, rendering it a very conspicuous plant. It is also found in Chiloe and Juan Fernandez, and in the Old World it inhabits New Zealand. Though an ally of *S. aurata*, it is perfectly distinct from that plant, especially in the granular and not powdery margins of the thallus, also in size and general features. It is certainly as well marked as any species of Lichen confined to the southern latitudes.

PLATE CXCV. *Fig.* II.—1, plant in usual state; 2 and 3, portions of thallus; 4, plant as covered with granular tubercles of the natural size; 5, granular surface of thallus; 6, apothecia; 7, under surface of thallus; 8, lamina proligera; 9, spores:—all highly *magnified*.

3. STICTA *orygmæa*, Ach.; *Fl. Antarct.* Pt. 1. p. 197.

HAB. Staten Land, (fid. *Acharius*). Strait of Magalhaens, *D'Urville*.

This species was not seen at Cape Horn or the Falkland Islands: but we have specimens from Chiloe and Juan Fernandez. It is singular that a Lichen, which abounds in Lord Auckland's group and Campbell's Island, should not be also found at Cape Horn; and that the *S. endochrysa* of Cape Horn is found in New Zealand, but does not spread so far south as Lord Auckland's group. The much greater cold of Fuegia might be prejudicial to the *S. orygmæa*, but there is no apparent reason for *S. endochrysa* being foreign to Lord Auckland's group. I suspect that the Acharian plant from Staten Land, referred to as *S. orygmæa*, is the *S. endochrysa*, Del.; and that the specimens were received from Menzies.

There are very remarkable differences between the Lichens of those two divisions of Antarctic botany which are here adopted: the most salient features of which consist in the presence or abundance of the following Lichens in only one of the divisions.

LORD AUCKLAND'S GROUP AND CAMPBELL'S ISLAND.	CAPE HORN.
	Usnea melaxantha.
Ramalina inflata.	*Ramalina scopulorum.*
Stereocaulon ramulosum.	*Cetraria Islandica.*
——— *Argus.*	*Nephroma polaris.*
Sticta orygmæa.	*Stereocaulon corallinum.*
—— *Menziesii.*	*Sticta endochrysa.*
—— *Delisea?*	—— *crocata.*
—— *faveolata.*	—— *Freycinetii.*

This remarkable predominance of certain very widely distributed forms in the southern extremity of the Western Hemisphere, and the absence of the same in similar positions in the Eastern, admit of no explanation, beyond what climate will afford.

4. STICTA *obvoluta*, Ach.; *Lich. Univ.* p. 452 (*vix Delise*). S. hirsuta, *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 188. t. 15. f. 2.

HAB. Staten Land.; *Menzies*. Strait of Magalhaens; *M. Hombron*.

Of this we possess an authentically named specimen, gathered and labelled by Menzies himself: in it the cyphellæ are pale yellow; as Montagne describes those of his *S. hirsuta*. M. Delise does not seem to have understood the species, and describes apparently a very different plant under this name. It is closely allied to the *S. cometia* of Peru, in which the apothecia are fringed with much longer hairs, and also to the *S. Humboldtii*, Hook., another Peruvian plant with fringed apothecia; but both of these have white cyphellæ.

Sticta obvoluta is also a native of South Chili and Juan Fernandez.

5. STICTA *Billardieri*, Delise, *Monogr. Stict.* p. 99. t. 8. f. 35. S. Richardi, *nobis in Fl. Antarct.* Pt. 1. p. 198. (*non Mont.*)

Var. *β*. lobis thalli subter pallidioribus. S. divulsa, *Tayl. in Lond. Journ. Bot.* vol. vi. p. 182.

HAB. Chonos Archipelago; *C. Darwin, Esq.*

A New Zealand and Tasmanian species, agreeing remarkably well with the figure and description of Delise, except in the under surface being more pale than is described by that author. It differs from *S. faveolata*, Delise, in the much longer and narrower lobes and paler under surface, and in the absence of the granulations on the upper. The apothecia are all marginal when young, deeply concave, the older in these specimens convex, with a very narrow margin: this convexity is not a character to which too much importance should be attached, because the apothecia of many allied species vary extremely on the same specimen, from concave to convex; and these differences do not in such species depend on age.

This is the *S. Richardi* of the first part of this work, but not of Montagne, the true *S. Richardi* having much broader lobes to the thallus, more or less rough or even scrobiculate on the upper surface, and almost wholly smooth on the under. It is very nearly allied to the true *S. carpoloma*, but differs in the white cyphellæ, and like many others of the faveolate group it is possibly only a variety of *S. damæcornis*.

We have specimens from the Chonos Archipelago, from Chiloe and the Island of Huaffa (on the coast of South Chili), agreeing entirely with one another in the (when dry) pale yellow-brown shining colour of the upper surface. The New Zealand and Lord Auckland's Island examples are rather paler: in all, the under surface of the lobes is naked and tawny yellow towards the apex.

6. STICTA *faveolata*, Delise; *Monogr. Stict.* p. 101. t. 8. f. 36. *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 186.

HAB. Strait of Magalhaens; *Hombron.*

We have thought it possible that what we have called *S. Billardieri*, Del., may be the *S. faveolata* of Montagne (in Voy. au Pole Sud); especially as that author makes no mention of the granular lines on the upper surface so expressly alluded to by Delise (under *S. carpoloma*); and also from this *S. faveolata* of Montagne being found by the officers of the French South Polar Expedition, both in the Strait of Magalhaens and Lord Auckland's group. In the absence, however, of authentic specimens, and of any explanatory note by Montagne (whose specimens were very insufficient) on the species he calls *S. faveolata*, we are obliged to abide by the published figures of Delise.

The lacunose fronded *Sticteæ* with white soridia, form a most natural group of species, so inextricably confounded by nature, if they be really and truly species at all, that we have failed in discovering limits to the variations of any of them. Even the colour of the cyphellæ is very unsatisfactory, there being, between the snow-white of the *S. Billardieri* and dirty yellow of some others, all intermediate tints; and in the same species, almost on the same specimen, of Tasmanian examples of *S. faveolata* (?), it is impossible to say whether the cyphellæ are dirty white or pale yellow; whilst other specimens, in all respects similar, have their colour well pronounced.

7. STICTA *variabilis*, Ach.; *Delise, Monogr. Stict.* p. 119. t. 11. f. 48. *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 185.

HAB. Strait of Magalhaens; *Jacquinot.*

Possibly these specimens are referable to a state of that highly variable plant which we have referred to the *S. Freycinetii*, Del.

8. STICTA *Thouarsii*, Delise, *Monogr. Stict.* p. 90. t. 8. f. 29. S. scrobiculata, *nobis in Lond. Journ. Bot.* vol. iii. p. 646 (*non Ach.*).

Hab. Hermite Island, Cape Horn, and the Falkland Islands; on rocks, &c. Tristan d'Acunha; *Petit Thouars*.

The specimens examined, when preparing the short notice of the Antarctic Lichens for the London Journal of Botany, were very imperfect; and their under-surface exhibiting no cyphellæ, we referred them to the *S. scrobiculata*, which they considerably resemble, especially in colour, and in their fetid scent when moistened. Other specimens showed white cyphellæ in abundance, and allied the plant so closely to the European *S. limbata*, that we can detect no marked difference between them, beyond what is afforded by the colour of the powdery granulations of the surface.

Delise's description of *S. Thouarsii* leaves no doubt in our mind of this being his plant. The apothecia are unknown. Fuegian specimens are of a paler colour than the Falkland Island ones.

9. Sticta *Freycinetii*, Delise; *Monogr. Stict.* p. 124. t. 14. f. 51 (*non Flor. Antarct.* Pt. 1. p. 196). S. fulvo-cinerea, *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 184? S. glabra, *nobis in Lond. Journ. Bot.* vol. iii. p. 647 (*in part*). Parmelia lactucæfolia, *Pers. in Freyc. Voy. Bot.* p. 200. (Tab. CXCVI.)

Hab. Hermite Island, Cape Horn; trunks of trees and rocks, from the sea to the mountain tops. Falkland Islands; very abundant on maritime rocks, &c. Strait of Magalhaens, Port Famine; *Capt. King*. Staten Land; *Menzies*.

We have added a figure of this much-disputed species, concerning which we have fallen into an error in the previous part of this work, having regarded it as synonymous with the *S. glabra* of Lord Auckland's group and Tasmania (probably the *S. Delisea* Fée,), and which differs from the *S. Freycinetii* principally in the very shallow, not deeply cupped apothecia.

Fuegia and the Island of Juan Fernandez are the only localities in which we know this species to occur.

Plate CXCVI. *Fig.* 1 and 2, portions of thallus of the natural size; 3, apex of ditto, with undeveloped and mature apothecia; 4, ditto with abortive (?) ditto; 5, slice of lamina proligera; 6, ascus; 7, spores:—very highly *magnified*.

10. Sticta *filicina*, Ach.; *Lich. Univ.* p. 145. Platisma Filix, *Hoffm. Plant. Lich.* t. 55.

Hab. Hermite Island, Cape Horn; on dead wood.

Our specimens, which are small and barren, differ in colour and in the less decidedly marked costæ, from those of New Zealand; the lobes also are occasionally furnished with an isidiophorous border. The thallus is about an inch and a half high, the upper surface of a dirty greenish-brown, the under pale yellow-brown and uniformly covered with a short tomentum, into which the concolorous and rather large cyphellæ are sunk. They may, indeed, belong to a state of *S. obvoluta*, Ach., with the upper surface glabrous; but hardly to any of the other species enumerated here.

8. STEREOCAULON, *Ach.*

1. Stereocaulon *coralloinum*, Fries; *Lich. Europ.* p. 201. *Moug. et Nestl.* n. 78. S. paschale, *nobis in Lond. Journ. Bot.* vol. iii. p. 653 (*non Ach.*).

Hab. Hermite Island, Cape Horn; on rocks near the sea. Kerguelen's Land; on alpine rocks, 600–1200 feet.

We have before pointed out the singular scarcity, in the Southern Hemisphere, of some of those Lichens which are most abundant in all latitudes of the North Temperate and Arctic Zones. *Stereocaulon coralloinum* affords another remarkable instance of this anomalous distribution. Except, perhaps, the *Cenomyce rangiferina*, it is the very commonest of all Lichens in the subalpine districts of Britain and Central Europe, in the Alpine

Sticta Freycinetii, Del.

regions of Southern Europe ascending to the summit of the Pyrenees, and to the level of perpetual snow on the Alps. Again, in the Arctic zone it is found carpeting the otherwise naked steppes of Asia and the barren lands of America, thence reaching the ultima thule of vegetable life in Melville Island and Ross Islet. To the south of its principal parallel it inhabits the Canary Islands, and a variety is seen on the Andes of Mexico and Colombia. Still further south it is replaced in all longitudes by the following species, being itself unknown in the Southern Hemisphere except at Cape Horn and Kerguelen's Land, where it re-appears in abundance. To reconcile this singular fact with the views of those who suppose it to have migrated into Kerguelen's Land, it is almost necessary to consider the *S. ramulosum*, which inhabits Lord Auckland's group, Campbell's Island, Tasmania, and the northern parts of Fuegia, as a southern variety of *S. corallinum*, which has, in Kerguelen's Land and Cape Horn, reverted to the northern form.

2. STEREOCAULON *ramulosum*, Ach. *Fl. Antarct.* Pt. 1. p. 195. t. lxxx. *f.* 1.

HAB. Strait of Magalhaens, *Capt. King.* Chonos Archipelago, *C. Darwin, Esq.*

This widely distributed species replaces in the Southern Hemisphere, to a considerable degree, the *S. paschale* and *corallinum* of the Northern, but not fully; for it only enters what we have elsewhere defined to be the Antarctic zone of vegetation, not reaching the Falkland Islands, the southern parts of the Fuegian Islands or Kerguelen's Land. In the Old World it first appears in Bourbon, thence ranging from the Philippines, through Java, Australia, the South Sea Islands, Tasmania and New Zealand, to Lord Auckland's group and Campbell's Island, abounding in rocky and damp places, also on the trunks of large trees. In the New World it commences in the West Indian Islands, whence Swartz originally procured it, and runs through every parallel of latitude to the Strait of Magalhaens.

As a species *S. ramulosum* appears, at first sight, abundantly distinct from *S. corallinum*, nor does it display a tendency to assume any northern form of the genus in the Strait of Magalhaens. In Tasmania, again, where it ascends the mountains and becomes dwarfish, its lateral ramuli are still slender and fibrous, typical of the species. On the other hand, some of the tropical specimens, especially those from the Equatorial Andes (where both species occur), appear intermediate between *S. ramulosum* and *corallinum*; insomuch that it becomes a matter of opinion alone, whether the *S. ramulosum* should be considered a southern state of *S. corallinum*, owing its greater development to the more uniform temperature and humidity of the localities it affects in the Southern Hemisphere; or whether these are two species, one originating in the Southern Hemisphere, and one in the Northern, meeting under the Line, and there varying into the similitude of one another.

3. STEREOCAULON *alpinum*, Fries; *Lich. Europ.* p. 204.

HAB. Hermite Island, Cape Horn; on the summits of the hills.

A native of all the European Alps, also of the Andes of Peru.

4. STEREOCAULON *denudatum*, Somm.; *Lapp.* p. 126. *Fries, Lich. Europ.* p. 204. *Moug. et Nestl.* n. 466.

HAB. Hermite Island, Cape Horn; on rocks near the sea.

Also an inhabitant of the Alps of Europe and the Mexican Andes.

We are indebted to the Rev. Churchill Babington for the identification of the species of this difficult genus.

9. SPHÆROPHORON, *Ach.*

1. SPHÆROPHORON *coralloides*, Ach.; *Lich. Univ.* p. 585. *Engl. Bot.* t. 115. *Moug. et Nestl.* n. 262.

HAB. Strait of Magalhaens, throughout Fuegia and the Falkland Islands; on the ground and on trunks of trees, most abundant, ascending to the tops of the mountains.

A common Antarctic American plant, rarer in Tasmania, and replaced in Lord Auckland's group by *S. tenerum*. Its range is very wide in both hemispheres, from within the Arctic circle of the New and Old Worlds, attaining Walden Island north of Spitzbergen, within 9° of the North Pole, stretching south, throughout Europe, to the Asturias, Switzerland, and Madeira, and in America to Newfoundland.

2. SPHÆROPHORON *tenerum*, Laurer. *Fl. Antarct.* Pt. 1. p. 195. *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 172. (TAB. CXCVII. Fig. I.)

HAB. Hermite Island, Cape Horn; most abundant on the hills. Chonos Archipelago, *C. Darwin, Esq.*

In the former part of this work we have pointed out the characters which distinguish this species from the *S. coralloides*. It is much more frequent in Tasmania and New Zealand than in South America, in the latter country having been only found at Cape Horn, Fuegia, Chiloe, and the Chonos Archipelago.

I know of no Lichen which exhibits so well the successive development of "laminæ proligeræ" in the same apothecium. A vertical section of the youngest fruit shows two strata, parallel to, or rather concentric with, one another. Of these, the upper is fully ripe long before the bursting of the apothecium. It consists of innumerable filiform asci, containing from eight to thirty and more sporules. The sporules are vertically arranged and so densely packed that each ascus resembles a moniliform filament: the lower are smaller, the upper gradually larger; none however, attain their full size till after the absorption or disappearance of the walls of the asci; when they escape as spherical bodies, surrounded by a narrow transparent margin.

The thallus of this genus consists of a firm crustaceous transparent cortex, whose inner edge is sharply defined, enclosing a mass of longitudinally arranged, matted, curved, dry filaments. These filaments are cylindrical, terete, sparingly supplied with very short ramuli, and truncate or obtuse at either extremity: they entirely surround the nucleus of the very immature apothecium.

PLATE CXCVII. *Fig.* I.—1, fertile, and 2, barren specimens, of the natural size; 3, young, 4, mature, and 5, aged apothecia; 6, 7, and 8, vertical sections of 3, 4, and 5, respectively, showing the formation of successive laminæ proligeræ; 9, asci and spores; 10, young (or possibly abortive) asci; 11, mature ascus; 12, spores; 13, cortical and filamentous substance of thallus; 14, filaments from the latter:—all highly *magnified*.

3. SPHÆROPHORON *compressum*, Ach. *Fl. Antarct.* Pt. 1. p. 196.

HAB. Hermite Island, Cape Horn, and Falkland Islands; on turfy ground, abundant.

These specimens are identical with the English plant so called. It is also an Auckland Island species, and is found in various countries, both within and without the tropics, as far north as the barren lands bordering the Polar Sea in Arctic America. In Europe, Wahlenberg remarks, that it does not occur in any part of Scandinavia. In the Southern Hemisphere it grows on the South American Andes and in Van Diemen's Land.

4. SPHÆROPHORON *australe*, Laurer. *Fl. Antarct.* Pt. 1. p. 195.

HAB. Strait of Magalhaens; Port Famine; *Capt. King.*

Manifestly identical with the Tasmanian, New Zealand, and Lord Auckland's group species of this name, but not hitherto found elsewhere in the New World.

5. SPHÆROPHORON *fragile*, Ach.; *Lich. Univ.* p. 585. *Engl. Bot.* t. 2474. *Mont. in Voy. au Pole Sud*, p. 172.

HAB. Strait of Magalhaens; *D'Urville.*

A frequent Arctic and North Temperate zone plant, reaching the latitude of Igloolik in the American Polar Sea, and, in Europe, Lapland, Spitzbergen and even Ross Islet, the most northern known land in the world.

Sphærophoron tenerum, Lasp.

Parmelia cincinnata, Ach.

Lecanora paleacea, Fries.

Lith. & W. Fitch, del.

Bayer imp.

10. CENOMYCE, *Ach.*

1. CENOMYCE *pyxidata*, Ach.; *Lich. Univ.* p. 534. *Engl. Bot.* t. 1393. *Schær. Lich. Helvet.* n. 53–55.

HAB. Strait of Magalhaens; Port Famine, *Capt. King.* Port Gallant; *MM. Hombron* and *Jacquinot.*

Abundant throughout the Tropics, but not observed south of the Strait of Magalhaens in extra-tropical South America. In the Arctic regions it reaches to the very termination of vegetable life at Ross Islet, in 82° N.

2. CENOMYCE *gracilis*, Ach.; *Lich. Univ.* p. 550. *Engl. Bot.* t. 1824.

HAB. Falkland Islands; on the ground, not uncommon.

Possibly a state of *C. sparassa*, there being a decided tendency in the podetia to become squamulose. It is also a native of the extreme north, Spitzbergen, Walden, and Ross Islets.

3. CENOMYCE *fimbriata*, Ach.; *Lich. Univ.* p. 535. *Engl. Bot.* t. 2438.

Var. *ustulata*; podetiis brevibus lanceolatis fistulosis curvato-decumbentibus basi concoloribus apice nigrescentibus, gemmis pulverulento-granulosis. C. ustulata, *nobis in Lond. Journ. Bot.* vol. iii. p. 652.

HAB. Falkland Islands; abundant on dry heathy soils: Var. *ustulata*, on sand-hills, near Uranie Bay.

The apothecia in these specimens copiously fringe the margins of the cups, and becoming coalescent form a broad lobed mass.

4. CENOMYCE *verticillata*, Ach.; *Lich. Univ.* p. 555. *Dill. Hist. Musc.* t. 14. f. 6 *G.*

HAB. Falkland Islands; in heathy places, abundant.

Our specimens entirely agree with others of British growth and with the figure of Dillenius.

5. CENOMYCE *cornuta*, Ach.; *Lich. Univ.* p. 545. *Fries, Lich. Europ.* p. 225.

Var. γ. *ramosa*, Delise; *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 174.

HAB. Strait of Magalhaens; on rocks and trunks of trees, *M. Jacquinot.*

6. CENOMYCE *furcata*, Ach.; *Lich. Univ.* p. 560.

Var. *squamulosa*, Delise; *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 175.

HAB. Strait of Magalhaens, Port Famine; on dead trunks of trees, *M. Jacquinot.*

7. CENOMYCE *coccifera*, auct.; *Engl. Bot.* t. 2051. Cladonia cornucopioides, *Fries, Lich. Europ.* p. 236.

HAB. Hermite Island, Cape Horn, and the Falkland Islands; abundant on the hills.

8. CENOMYCE *deformis*, Ach.; *Lich. Univ.* p. 538. *Engl. Bot.* t. 1349. *Schærer, Lich. Helvet.* n. 47–49.

HAB. Hermite Island, Cape Horn, and the Falkland Islands; ascending to the tops of the mountains.

9. CENOMYCE *rangiferina*, Ach.; *Lich. Univ.* p. 564. *Engl. Bot.* t. 173. *Schærer, Lich. Helvet.* n. 76, 77.

Var. *alpestris*, Eschw.; *Dill. Hist. Musc.* t. 16. f. 30 *A. B. Fries, Lich. Europ.* p. 243.

Var. *sylvatica*, Hoff.; *Dill. l. c.* f. 29 *E. F. Fries, Lich. Europ.* p. 243. *Schærer, Lich. Helvet.* n. 78.

HAB. Throughout South Chili, Puegia, and the Falkland Islands; most abundant.

Though so widely distributed a Lichen, and, as Fries remarks, "omnium Lichenum copiosissima", this species has its limits within the parallels attained by its congeners and other plants. In the south it is stunted at Cape Horn, and neither inhabits Kerguelen's Land or the South Shetlands; whilst, towards the Northern Pole, it was not detected in Melville Island, though attaining a much higher latitude in Spitzbergen.

10. CENOMYCE *uncialis*, Ach.; *Lich. Univ.* p. 559. *Engl. Bot.* t. 174. *Schærer, Lich. Helvet.* n. 84.

HAB. Strait of Magalhaens; Port Famine, *Capt. King*.

Not observed in Hermite Island or the Falklands; nor does it extend in the Arctic regions beyond the continents of Europe and America.

11. CENOMYCE? *vermicularis*, Ach.; *Lich. Univ.* p. 566. *Engl. Bot.* t. 2029.

HAB. Hermite Island, Cape Horn, and the Falkland Islands; local, but very abundant where it occurs.

We cannot but regard this as the abnormal state of some *Cenomyce* (possibly of *aticicornis* or *endiviæfolia?*); though we have never succeeded in identifying the species. It is a highly Arctic and Antarctic plant, in the northern regions advancing to the extreme limits of vegetation, in islands beyond Spitzbergen. It also has been collected on the Andes of Peru and of Colombia.

12. CENOMYCE *aggregata*, Ach.; *Lich. Univ.* p. 563. *Fl. Antarct.* Pt. 1. p. 197. t. lxxx. f. 2.

HAB. South Chili, throughout Fuegia and the Falkland Islands; from the sea to the hill-tops, very abundant.

A very abundant plant in the higher latitudes of the Southern Hemisphere, from Monte Video on the east, Mendoza in Central Chili, Colombia on the Andes, and Juan Fernandez on the west coast of South America to Cape Horn. Its various northern limits in the Old World are the Cape colony in South Africa, Nepaul in Asia, Swan River in Australia, and Norfolk Island in the Pacific. In Tasmania and New Zealand it abounds, reaching 52° S. in Campbell's Island.

13. CENOMYCE *bacillaris*, Ach.; *Synops.* p. 266. Cladonia macilenta, *Fries, Lich. Europ.* p. 241.

HAB. Falkland Islands; dry places on the hills.

Probably a state of *C. coccifera*, and the original *C. coccifera*, *a.*, Linn. It is a native both of the Tropics, and north Temperate zones.

14. CENOMYCE *sparassa*, Ach.; *Synops.* p. 273. *Engl. Bot.* t. 2362. Clad. squamosa *and* ventricosa *Fries, Lich. Europ.* p. 231.

HAB. Hermite Island, Cape Horn; on the mountain tops.

The *C. ecmocina*, var. *gracilis*, of Lord Auckland's group, should be referred here; its podetia being squamulose, though but slightly so.

11. PARMELIA, *Ach.*

1. PARMELIA *enteromorpha*, Ach.; *Synops.* p. 219. P. physodes, *β.* vittata, *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 182. P. lugubris, *Pers. in Freyc. Voy. Bot.* p. 196.

Var. *β. deusta*; parvula, rigida, thallo suberecto brevi subfilabellatim diviso, lobis atris patulis angustis canaliculatis utrinque concoloribus.

HAB. Hermite Island, Cape Horn; from the sea to the mountain tops. Falkland Islands; very abundant. Var. β. barren rocks near the top of Kater's peak.

This species was also found abundantly in Lord Auckland's group and Campbell's Island, though omitted in the first part of the Flora Antarctica. It is further a native of New Zealand and Tasmania; of North-west America, from California to Sitka, and we possess a specimen labelled as from the Mauritius.

Specifically, this differs from *P. physodes* only in the length of the lobes of the thallus, and these are so variable as to lead to some doubts of the validity of the species. In Tasmanian specimens the lobes are often much dilated and plane, the membranes of which it is composed, and which are normally inflated, being here, not only in contact, but firmly united together; thus effecting a passage between this species and the forms to which *P. perlata*, &c. belong.

We have authentically named specimens of the North-west American *P. physodes*, β. *vittata*, which is only a narrower state of *P. enteromorpha*. Norwegian specimens also of the latter plant appear to be clearly referable to this.

2. PARMELIA *diatrypa*, Ach.; *Syn. Lich.* p. 219. *Engl. Bot.* t. 1248. *Moug. et Nestl.* n. 65.

HAB. Hermite Island, Cape Horn; on stems of bushes and on branches of trees, on the mountains. Chonos Archipelago, *C. Darwin, Esq.*

Probably only a small, or alpine, form of *P. enteromorpha*; it was found in similar situations in Lord Auckland's group, and on the top of Mount Wellington in Tasmania. Besides being a native of Great Britain and alpine situations in northern and midland Europe and of the Sandwich Islands.

3. PARMELIA *cincinnata*, Ach.; *Lich. Univ.* p. 495. *Syn. Lich.* p. 219. (TAB. CXCVII. Fig. II.)

HAB. Staten Land, *Menzies*. Hermite Island, Cape Horn; on rocks and trunks of trees above the limit of the evergreen Beech.

By the apothecia this beautiful species may be distinguished, both from *P. diatrypa* and *P. enteromorpha*, some of our specimens, indeed, are on the same piece of wood with *P. diatrypa*, both retaining their characters. They entirely agree in every other respect with one collected by Menzies, except in being of a pale lemon colour.

PLATE CXCVII. *Fig.* II.—1, specimen of the natural size; 2, portion of ditto; 3, vertical section of apothecium; 4, slice of lamina proligera; 5, ascus; 6 and 7, spores:—highly *magnified*.

4. PARMELIA *saxatilis*, Ach.; *Synops.* p. 203. *Engl. Bot.* t. 603. *Mougeot et Nestler*, n. 347 and 738.

HAB. Hermite Island, Cape Horn, and the Falkland Islands; abundant on alpine rocks. Cockburn Island, Graham's Land; very scarce.

None of these specimens are in fruit, but they accord perfectly with Scottish and other European examples. The lobes of the thallus vary a good deal in size and colour, according to exposure. What is believed to be this plant was seen at Cockburn Island, on the verge of Antarctic vegetation, but, as the specimens were lost previous to comparison, some doubt may be entertained of the correctness of this habitat. Besides being abundant throughout Europe, advancing as far north in Spitzbergen as vegetation extends, and in Temperate and North America, this species has been found on the Mexican Andes, on the barren grounds bordering the Polar Sea, and also in the Arctic Islands.

5. PARMELIA *rubiginosa*, Ach.; *Lich. Univ.* p. 467. *Engl. Bot.* t. 988.

Var. β. *sphinctrina*. P. sphinctrina, *Mont. in Voy. au Pole Sud, Bot. Crypt.* p. 180. t. 45. f. 3.

HAB. Var. β. Hermite Island, Cape Horn; on trunks of trees.

Chiefly characterized by its much more continuous and leafy thallus. The *P. rubiginosa* is a sub-Arctic species, extending as far north as the region of Willows and Birch in Norway.

6. PARMELIA *stellaris*, Ach.; *Lich. Univ.* p. 476. *Engl. Bot.* t. 1351.

HAB. Cockburn Island, Graham's Land; on rocks.

A specimen apparently of this species was found; but in a very insufficient state for determination.

12. LECANORA, *Ach.*

§ I. *Psoroma*, Fries.

1. LECANORA *microphylla*, Ach.; *Lich. Univ.* p. 420. *Engl. Bot.* t. 1247. *Schærer, Lich. Helvet.* n. 160.

HAB. Staten Land; on dead wood, *A. Menzies, Esq.*

Possibly the *L. triptophylla*, Fries, but the specimens are not very satisfactory; they agree tolerably with the plate and specimens quoted. *C. Babington.*

2. LECANORA *paleacea*; (Parmelia), *Fries, Lich. Europ.* p. 97. (TAB. CXCVII. Fig. III.)

HAB. Falkland Islands; on the ground and on Tussock mounds, rare.

A very rare and curious species, hitherto known only as a native of Denmark. The paleaceous apothecia resemble a *Peziza*. We have seen no authentic specimens, and add a figure of the Falkland Island plant.

PLATE CXCVII. *Fig.* III.—1, plant of the natural size; 2 and 3, young and mature apothecia; 4, vertical section of portion of apothecium; 5, asci; 6, spores:—highly *magnified*.

3. LECANORA *muscorum*, Ach.; *Syn. Meth. Lich.* p. 198. Lich. carnosus, *Engl. Bot.* t. 1684.

HAB. Falkland Islands; on the ground and on decaying roots of Ferns.

4. LECANORA *Hypnorum*, Ach.; *Syn. Meth. Lich.* p. 198. *Engl. Bot.* p. 740. *Fl. Antarct.* Pt. 1. p. 199.

HAB. Hermite Island, Cape Horn; on mossy trunks of trees. Falkland Islands; on the ground, &c.

§ II. *Placodium*, Fries.

5. LECANORA *chrysoleuca*, Ach.; *Lich. Univ.* p. 411.

Var. β. *Daltoni*; thallo centro affixo, lobis radiantibus cuneatis, gemmis marginalibus granuliferis. Lecanora Daltoniana, *nobis in Lond. Journ. Bot.* vol. iii. p. 641. (TAB. CXCVIII. Fig. I.)

Var. γ. *lignicola*; thallo adnato, lobis cortice appressis.

HAB. Var. β. Cockburn Island, Graham's Land. Var. γ. Hermite Island, Cape Horn; on trunks of trees.

A very rare inhabitant of the Southern Hemisphere, and there confined to the Antarctic regions. The two varieties are certainly not distinct from the European *L. chrysoleuca*, which inhabits mountainous regions from Norway to the Alps and Pyrenees.

PLATE CXCVIII. *Fig.* I.—1, mature, and 2, immature specimens of var. β. of the natural size; 3, upper, and 4, lower view of thallus; 5, central portion of ditto, with young apothecia; 6, mature apothecium; 7. vertical section of ditto; 8 and 9, portions of ditto showing the lamina proligera; 10, asci; 11, spores:—all *magnified*.

I.

Lecanora chrysoleuca, Ach. (var.)

II.

Lec. miniata, Ach.

III.

Lec. Babingtoni, B.F. & Tayl.

IV.

Verrucaria umbrina, Ach.

6. Lecanora *Babingtoni*, Hook. fil. et Tayl.; thallo crustaceo adnato orbiculari subsquamuloso arcolato areolis radiantibus albido-glaucescente demum virescente, squamulis diffractis ambitu sub-continuis crenulatis, apotheciis adnatis margine thallode tenuissimo evanescente, disco atro primitus tumido margine subelevato demum planiore immarginato. Lecidea atro-alba, *nobis in Lond. Journ. Bot.* vol. iii. p. 636 (*quoad exempl. Ins. Cockburn*). (Tab. CXCVIII. Fig. II.)

Hab. Cockburn Island, Graham's Land; on volcanic rocks.

Thallus inconspicuus $\frac{1}{2}$–1 unc. diametro, margine definito crenulato, totus in areolas minimas (non nisi ope lentis conspicuas) diffractus; areolis angulatis, albidis, saxæ adnatis, centralibus fortilibus, reliquis radiantibus, extimis subfoliaceis lobatis crenulatisve. *Apothecia* punctiformia, interiora majora subconfluentia.

Although the specimens of this plant brought from Cockburn Island are very perfect and well developed, they belong to so difficult a group of Lichens as to have baffled the Rev. Mess. Babington, Berkeley, and ourselves, in our attempts to reduce it to any known species. Though closely resembling a *Lecidea* in habit, and, indeed, in characters too, it is certainly not of that genus, for though, as Mr. Berkeley remarks, the apothecia of *Lecid. viridans* and *confluens* are sometimes obscurely margined (as in this species), yet, Mr. Babington observes, that the thallus here is radiating, which is not the case with the areolate *Lecideæ*, nor has it the carbonaceous margin to the apothecium and substratum of that genus.

Of the tribe in which it should be placed (as a *Lecanora*) there is some doubt: Mr. Berkeley regards it as belonging to the section "*glaucescentes*" of *Placodium*, Fries, and allied to *L. coarctata*, in which the thallodal border of the apothecium is evanescent. Mr. Babington, on the other hand, remarks, that the thallodal border and that of the disc itself place it in *Psora*, Fries, and that it will rank amongst the section "*glaucescentes*" near *L. melanaspis*, of which it may possibly be a variety, or a depauperated and crustaceous form. The figure represents the plant as freshly gathered, before drying; it has since assumed a more obscure, somewhat leaden colour, and the oldest portions of the thallus break up into a greenish mass, which is not given in our plate.

Plate CXCVIII. *Fig.* II.—1, plant of the natural size; 2, portion of ditto; 3, central part of thallus and apothecia; 4 and 5, lateral views of areola and apothecia; 6, vertical slice of two apothecia; 7, portion of lamina proligera:—highly *magnified*.

7. Lecanora *gelida*, Ach.; *Lich. Univ.* p. 428. *Engl. Bot.* t. 699. Urceolaria macropthalma, *nobis in Lond. Journ. Bot.* vol. iii. p. 640.

Var. *β. vitellina*, thallo vitellino.

Hab. Kerguelen's Land; both varieties very common.

The variety *β.* is probably dependent on the thallus having changed colour. What was described as *Urceolaria macropthalma* is a state noticed by Fries (Lich. Europ. p. 104). *C. Babington.*

8. Lecanora *murorum*, Ach.; *Lich. Univ.* p. 433. *Engl. Bot.* t. 2157.

Var. *furcta*; apotheciis substantia granulata fere clausis.

Hab. Hermite Island, Cape Horn, the Falkland Islands, and Cockburn Island, Graham's Land; on maritime rocks. Var. *β.* Kerguelen's Land; on rocks near the sea.

9. Lecanora *miniata*, Ach.; *Lich. Univ.* p. 434. *Hoffm. Plant. Lich.* t. 60. f. 1.

Hab. Falkland Islands, and Cockburn Island, Graham's Land; very abundantly on rocks near the sea.

This plant forms the most curious feature in the botany of Cockburn Island, a desolate spot of land on the extreme limit of southern vegetation; for there it abounds so as to stain the rocks, and render the colour thus

produced visible for many miles. It is partial to the effluvium from decaying animal matter, as is the case with other *Parmeliæ* belonging to the citrinous series.

10. Lecanora *citrina*, Ach.; *Lich. Univ.* p. 402. *Engl. Bot.* t. 357. *Moug. et Nestl.* n. 742.

Hab. Kerguelen's Land; on rocks near the sea.

Specimens very imperfect, but, we think, referable to this species.

11. Lecanora *erythrocarpia*, Fries, *Lich. Europ.* p. 119. L. theioclyta, *Ach. Lich. Univ.* p. 425.

Hab. Kerguelen's Land; in a cave near the sea.

Rather a doubtful determination. *C. Babington.*

§ III. *Psora*, Fries.

12. Lecanora *melanaspis*, Ach.; *Lich. Univ.* p. 427. *Fries, Lich. Europ.* p. 122. L. dichroa, *nobis in Lond. Journ. Bot.* vol. iii. p. 643.

Hab. Kerguelen's Land; on hard earth and stones, rare.

13. Lecanora *molybdina*, Ach.; *Lich. Univ.* p. 430. *Fries, Lich. Europ.* p. 126.

Hab. Kerguelen's Land; on bare and hardened earth.

§ IV. *Patellaria*, Fries.

14. Lecanora *tartarea*, Ach.; *Lich. Univ.* p. 172. *Engl. Bot.* t. 156.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; abundant. Kerguelen's Land; rare.

15. Lecanora *parella*, Ach.; *Lich. Univ.* p. 370. *Engl. Bot.* t. 727.

Var. γ. *Upsaliensis*, Ach.; *Lich. Univ.* p. 371. *Engl. Bot.* t. 1634.

Hab. Falkland Islands; on quartz rocks. Var. γ. Hermite Island, Cape Horn, and the Falkland Islands; on the ground.

16. Lecanora *subfusca*, Ach.; *Lich. Univ.* p. 393. *Engl. Bot.* t. 2109.

Var. *epibryon*; Lecanora epibryon, *Ach. l. c. Moug. et Nestl.* n. 120.

Var. *albella*, Fries; Lecanora albella, *Ach. l. c. Engl. Bot.* t. 2157.

Hab. Strait of Magalhaens; on wood, *Capt. King.* Falkland Islands; on rocks, and on dead twigs of *Acæna*. Var. *epibryon*, Kerguelen's Land; on decayed *Azorella*. Var. *albella*, Hermite Island, Cape Horn; on Winter's bark.

17. Lecanora *atra*, Ach.; *Lich. Univ.* p. 344. *Engl. Bot.* t. 949. *Moug. et Nestl.* n. 458.

Var. β. *confragosa*, Ach.; *l. c.* p. 345.

Hab. Hermite Island, Cape Horn, and the Falkland Islands; on rocks. Var. β. Hermite Island, Cape Horn; on rocks.

18. Lecanora *sophodes*, var. *c. exigua*, Fries, *Lich. Europ.* p. 149. *Engl. Bot.* t. 1849.

Hab. Falkland Islands; on rocks.

19. LECANORA *ventosa*, Ach.; *Lich. Univ.* p. 399. *Engl. Bot.* t. 906. *Moug. et Nestl.* n. 256.

HAB. Falkland Islands; on alpine quartz rocks.

20. LECANORA *hæmatomma*, Ach.; *Lich. Univ.* p. 383. *Engl. Bot.* t. 486.

HAB. Falkland Islands; on clay-slate near the sea and on quartz rocks on the hills.

21. LECANORA *candelaria*, Ach.; *Lich. Univ.* p. 416. *Engl. Bot.* t. 1794.

HAB. Falkland Islands; on twigs of *Acæna*. Kerguelen's Land; on maritime rocks.

22. LECANORA *erythrella*, Ach.; *Lich. Univ.* p. 401. *Engl. Bot.* t. 1993.

HAB. Falkland Islands; on very arid quartz rocks at Port William.

13. URCEOLARIA, *Ach.*

1. URCEOLARIA *sordida*, Fries; *Lich. Europ.* p. 178. Lecanora glaucoma, *Engl. Bot.* t. 2156.

HAB. Falkland Islands; on rocks.

2. URCEOLARIA *endochlora*, Hook. fil. et Tayl.; crusta cinereo-albida tenui-rimosa inæquabili nigro-limitata et punctata, apotheciis immersis planis atris rotundato-difformibus, margine thallode tenui madore obsoleto, lamina tenuissima virescenti. *Nobis in Lond. Journ. Bot.* vol. iii. p. 640.

HAB. Kerguelen's Land; on rocks.

Crusta 2-unc. lata, eburnea, demum virescens. *Apothecia* oboonica, disco atro-pruinoso.

The lamina proligera rests upon a very thin layer of green matter, which, again, is placed on a black hypothallus. The plant approaches the *Baomyces anomalus*, Tayl. (in Flor. Hib.)

3. URCEOLARIA *scruposa*, var. *β. bryophila*, Fries; *Lich. Europ.* p. 101.

HAB. Hermite Island, Cape Horn; rocks on the top of Kater's peak.

4. URCEOLARIA *erubescens*, Hook. fil. et Tayl.; thallo crustaceo rimoso arcolato inæquabili ruguloso albido plerumque rufescente nigro-limitato, apotheciis confertis immersis concaviusculis difformibus subpellucidis olivaceis, disco scabrido nigro-punctato, margine thallode lacero-crenulato. *Nobis in Lond. Journ. Bot.* vol. iii. p. 640.

HAB. Falkland Islands; on rocks.

Thallus albidus, superficie plerumque colorato. *Lamina proligera* pellucida, strato albido insidens.

5. URCEOLARIA *calcarea*, Ach.; *Lich. Univ.* p. 340. Lichen cinereus, *Engl. Bot.* t. 820. Porina fallax (*in part*), *nobis in Lond. Journ. Bot.* vol. iii. p. 639.

HAB. Hermite Island, Cape Horn; on rocks and stones.

14. BIATORA, *Fries.*

1. BIATORA *corallina*. Lecidea corallina, *Eschweiler in Mart. Flor. Bras.* p. 256. L. mamillata, *nobis, et* L. geomœa, *Tayl.*; *nobis in Lond. Journ. Bot.* vol. iii. p. 636 and 637.

HAB. Hermite Island, Cape Horn; on the ground. Falkland Islands; on tufts of *Bolax*.

A true *Biatora*, having the margins of the young apothecia both coloured and soft. It is not a European species, though belonging to Fries' section "fuscescentes" and allied to *B. uliginosa*. I have little doubt of its being the plant of Eschweiler. *C. Babington.*

2. BIATORA *pulverea*, (Lecidea) Borr.; *in Engl. Bot. Suppl.* t. 2726.

HAB. Falkland Islands; on rocks.

15. LECIDEA, *Ach.*

1. LECIDEA *manillaris*, Fries? *Lich. Europ.* p. 285. Lichen tumidulus, *Smith in Linn. Soc. Trans.* vol. i. p. 82. t. 4. f. 3.

HAB. Hermite Island, Cape Horn; on the top of Kater's peak.

It is possible that these imperfect specimens may be referable to some paradoxical form of *L. vesicularis*. *C.B.*

2. LECIDEA *candida*, Ach.? *Lich. Univ.* p. 212. *Engl. Bot.* t. 1138. *Schærer, Lich. Helvet.* n. 167.

HAB. Hermite Island, Cape Horn; on hard soil.

I am not satisfied with the identification of this with the British *L. candida*: it may be merely a form of *L. vesicularis*. The hypothallus is black. *C. Babington.*

3. LECIDEA *vesicularis*, Ach.; *Lich. Univ.* p. 212. *Engl. Bot.* t. 1139. *Schærer, Spicel.* p. 120. *Lich. Helvet.* n. 168.

HAB. Hermite Island, Cape Horn, and the Falkland Islands; on the ground, abundant.

These specimens resemble *Isidium oculatum* when in a young state. I am in doubt whether some may not be referable to *L. epigæa*, which, as well as *L. vesicularis*, is a very polymorphous plant. *C. Babington.*

4. LECIDEA *aromatica*, Ach.; *Lich. Univ.* p. 168. *Engl. Bot.* t. 1777.

HAB. Kerguelen's Land; on moist rocks.

Specimens greener and darker than in Schærer's, but still I think referable to that species. *C.B.*

5. LECIDEA *albo-cærulescens*, Ach.? *Lich. Univ.* p. 188. Lichen pruinosus, *Engl. Bot.* t. 2244. L. confluens, *nob.* (*in part*), *Lond. Journ. Bot.* vol. iii. p. 636.

HAB. Kerguelen's Land; on rocks near the sea and on the hills.

Specimens very fine, altogether resembling what I have gathered on the Austrian Alps. *C. Babington.*

6. LECIDEA *spilota*, Fries; *Lich. Europ.* p. 297. L. rivulosa, *nobis, in Lond. Journ. Bot.* vol. iii. p. 636.

HAB. Kerguelen's Land; on moist rocks.

The specimens, which are rather young, certainly do not belong to *L. rivulosa*, and are, I think, referable to *L. spilota*, with which species, however, I am not sufficiently acquainted. *C. Babington.*

7. LECIDEA *contigua*, Fries; *Lich. Europ.* p. 298. L. speirea, var. hydrophila, Fries, *l. c.* Lec. confluens, (*in part*), *Engl. Bot.* t. 1864.

HAB. Hermite Island, Cape Horn; on rocks. Var. *hydrophila*, Kerguelen's Land; also on rocks.

The disc does not appear to be pruinose when young, in which respect only this differs from Fries' plant. It is allied to *L. nitidula*, differing from it only in the apothecia springing from the crust; which is the case also in Schærer's specimens of that plant. *C. Babington.*

8. LECIDEA *atro-alba*, Ach.; *Lich. Univ.* p. 162. Lichen Œderi, *Engl. Bot.* t. 1117. *Schærer, Lich. Helvet*, n. 178.

HAB. Hermite Island, Cape Horn; on rocks.

The Cockburn Island plant, referred (in Lond. Journ. Bot.) to this, we have elsewhere described as *Lecanora Babingtoni*.

9. LECIDEA *lugubris*, Somml.; *Lapp.* p. 143. *Fries, Lich. Europ.* p. 314.

HAB. Hermite Island, Cape Horn; on rocks.

I have little hesitation in considering this plant to be that described by Fries; though I know the latter from description alone. It approaches Schærer's *L. atro-alba* (n. 178); but the apothecia do not appear to rise from the thallus. *C. Babington.*

10. LECIDEA *fusco-atra*, Ach.; *Lich. Europ.* p. 359. Lichen athrocarpus, *Engl. Bot.* t. 1929.

HAB. Kerguelen's Land; on rocks.

11. LECIDEA *stellulata, Tayl. in Flora Hib.* p. 118.

HAB. Kerguelen's Land; on rocks.

12. LECIDEA *glacialis*, Schærer; *Spicil.* p. 147. *Fries, Lich. Europ.* p. 323. L. sulphurea, *Ach., nobis in Lond. Journ. Bot.* vol. iv. p. 636.

HAB. Falkland Islands, on alpine quartz rocks.

At first sight this resembles *Lecanora sulfusca*, (or rather the var. *orosthea*,) but the hypothallus is quite black. I feel no doubt of its being the *L. glacialis*, which is compared with the above-mentioned species, both by Fries and Schærer. The only difference I can detect between the European and Antarctic specimens, lies in the apothecia of the former being dusky within, and not white.

13. LECIDEA *geographica*, Schærer; *Spicil.* p. 124. *Engl. Bot.* t. 245. Var. *urceolata, Schærer, l. c.*

HAB. Hermite Island, Cape Horn, the Falkland Islands, and Kerguelen's Land; very abundant on rocks from the sea to the mountain tops. Var. *urceolata*, Kerguelen's Land; on maritime rocks.

14. LECIDEA *parasema*, Ach.; *Lich. Univ.* p. 175. *Schærer, Lich. Helvet.* n. 197–199.

HAB. Hermite Island, Cape Horn; on bark of trees.

15. LECIDEA *sabuletorum*, Ach.; *Synops. Lich.* p. 20. L. quadricolor, Borr., *nobis, in Lond. Journ. Bot.* vol. iii. p. 637.

Var. γ. *coniops*, Fries, *Lich. Europ.* p. 340. L. scabra, *Tayl. in Herb. Hib.* p. 121.

HAB. Falkland Islands; on the ground. Var. *coniops*; Hermite Island, Cape Horn; on greenstone. Falkland Islands; on clay-slate rocks.

I am hardly satisfied with the determination of the Hermite Island specimens: they are certainly allied to the *L. sabuletorum* and also to *L. arctica*. They further resemble *Biatora vernalis*, var. *sanguineo-atra*, Fries; but this *L. sabuletorum* is scarcely a *Biatora*, and may be an undescribed species of *Lecidea*. *C. Babington.*

16. Lecidea *arctica*, Sommerf., *Lapp.* p. 156. Fries, *Lich. Europ.* p. 342.

Hab. Hermite Island, Cape Horn; on hard gravelly soil.

17. Lecidea *milliaria*, var. *c. liguiaria*, Fries, *Lich. Europ.* p. 343. Lichen dubius, *Engl. Bot.* t. 2347. Lecidea elæochroma, Ach.; *nobis, in Lond. Journ. Bot.* vol. iii. p. 636.

Hab. Falkland Islands; on dead twigs of *Acæna*.

A very puzzling species, differing from *L. elæochroma* in the pale hypothallus. I am doubtful if the English Botany *L. dubius* be the same plant, or *L. milliaria*, Fries. The only others to which the Falkland Island one can be referred, are *L. dolosa*, Fries, and *L. sabuletorum*, Fr.: but after a careful examination of Schærer's specimen of the former, and Reichenbach's of the latter, I have concluded that this belongs to neither of them. *C.B.*

18. Lecidea *abietina*, var. *rubens*, Eschweiler, *in Mart. Fl. Bras.* p. 251.

Hab. Hermite Island, Cape Horn; on bark.

I doubt not this being Eschweiler's plant, but am not convinced of that being the same with the European *L. abietina*. The hypophlœodal crust appears to indicate its not being a true *Lecidea*, whence it may prove to be a Lecideal form of some *Pyrenotheca*; to which genus the *L. abietina* properly belongs.

16. GYROPHORA, *Ach.*

1. Gyrophora *cænea*, var. *a.* Schærer, *Lich. Helvet.* n. 149.

Hab. Falkland Islands; on quartz rocks; very rare and barren.

It is remarkable that the Antarctic regions should present us with but a solitary species of this curious genus, which abounds so strikingly in the Arctic. In one respect they are replaced by *Sticteæ*, which are almost equally rare in the high northern latitudes. These latter affect an equable, as decidedly as the *Gyrophoræ* do an extreme climate; and it is in the Falkland Islands, of all the Antarctic localities, that the Lichens are exposed to the greatest and most sudden vicissitudes. The *G. cænea*, considered by Fries as a variety of *G. hyperborea*, is a Scotch and American plant.

17. OPEGRAPHA, *Ach.*

1. Opegrapha *atra*, Pers.; *Schærer, Lich. Helvet.* n. 98.

Hab. Hermite Island, Cape Horn; on the bark of trees. Falkland Islands; on stems of *Acæna*.

18. ARTHONIA, *Ach.*

1. Arthonia *polymorpha*, Ach.; *Syn. Lich.* p. 7. Eschweiler, *in Mart. Fl. Bras. Crypt.* p. 14. t. 9. f. 3. (*tabula sub. nom. A. tremellosæ.*) Lecanora micropthalma, *nobis in Lond. Journ. Bot.* vol. iii. p. 636.

Hab. Hermite Island, Cape Horn; on Winter's bark.

19. PERTUSARIA, *DC.*

1. Pertusaria *communis*, *DC.*; *Engl. Bot.* t. 677. *Schærer, Lich. Helvet.* n. 118.

Hab. Hermite Island, Cape Horn; encrusting the bark of trees, abundant. Kerguelen's Land; on rocks near the sea. Cockburn Island, Graham's Land; on rocks.

The Cockburn Island specimens are very imperfect, and may possibly belong to *Umbilicaria sordida*.

2. PERTUSARIA *Wulfenii*, DC.; *Fries, Lich. Europ.* p. 424. Porina fallax, *Pers.*; *Ach. Synops. Lich.* p. 110. Lichen hymenius, *Engl. Bot.* t. 1731.

HAB. Falkland Islands; on rocks.

20. THELOTREMA, *Ach.*

1. THELOTREMA *lepadinum*, Ach.; *Lich. Univ.* p. 312. t. 6. f. 1. *Schærer, Lich. Helvet.* n. 121. *Fl. Antarct.* Pt. 1. p. 200.

HAB. Hermite Island, Cape Horn; on Winter's-bark.

21. VERRUCARIA, *Pers.*

1. VERRUCARIA *umbrina*, Ach.; *Lich. Univ.* p. 291. *Engl. Bot.* t. 1499. V. gelida, *nobis in Lond. Journ. Bot.* vol. iii. p. 639. (TAB. CXCVIII. Fig. IV.)

HAB. Cockburn Island, Graham's Land; on rocks.

The difference between the apothecia of the Antarctic and European specimens is the same as exists between *V. maura* and *V. umbrina*, plants which I consider as specifically the same. *C. Babington.*

PLATE CXCVIII. *Fig.* IV.—1, plant of the natural size; 2, portion of crusti; 3, do with apothecia; 4 and 5, apothecia; 6 and 7, vertical slices of do; 8, portion of lamina proligera; 9 and 10, sporules:—all very highly *magnified.*

22. COLLEMA, *Ach.*

1. COLLEMA *crispum*, Ach.; *Synops. Lich.* p. 311. *Engl. Bot.* t. 834. Parmelia pulposa, *Schærer.*

HAB. Cockburn Island, Graham's Land; on wet earth.

Miserably depauperated specimens, referred both by the Rev. Mr. Berkeley and Babington to this plant.

2. COLLEMA *tremelloides*, Ach.; *Lich. Univ.* p. 455. *Engl. Bot.* t. 1981.

HAB. Hermite Island, Cape HORN; on wet banks.

Possibly the *C. palmatum*, Sm.; my only specimen of which plant (received from Mr. Borrer), may be a dwarf and brown one of *C. tremelloides. C. Babington.*

3. COLLEMA *saturninum*, Aclr; *Lich. Univ.* p. 644. *Engl. Bot.* t. 1980. C. myochroma, *Schærer, Lich. Helvet.*

Var. *australe*, thallo subferrugineo. Collema australis, *nobis in Lond. Journ. Bot.* vol. iii. p. 656.

HAB. Hermite Island, Cape Horn; on wet banks in dense woods; abundant.

There is a redder hue about these specimens than I am accustomed to see in British ones of *C. saturninum*, but according to Schærer's description, this is evidently a very variable plant. The characters drawn from the powdery buds, are not available. *C. Babington.*

(*Lichenes imperfecti.*)

23. ISIDIUM, *Ach.*

1. Isidium *oculatum*, Ach.; *Lich. Univ.* p. 570. *Engl. Bot.* t. 1833.

Hab. Hermite Island, Cape Horn, the Falkland Islands and Kerguelen's Land; on the earth.

Various *Parmeliæ* and *Lecanoræ* in a young state, are scarcely distinguishable from one another, and have been referred to *Isidium oculatum*.

2. Isidium *lutescens*, Turn. and Borr. Lepraria lutescens, *Engl. Bot.* t. 1529.

Hab. Kerguelen's Land; on rocks near the sea.

Very probably a state of *Lecanora murorum*.

24. LEPRARIA, *Ach.*

1. Lepraria *flava*, Ach.; *Lich. Univ.* p. 663. *Engl. Bot.* t. 1350.

Hab. Hermite Island, Cape Horn, the Falkland Islands and Kerguelen's Land; abundant near the sea.

Evidently the powdery state of some *Parmelia*, belonging to the citrinous series.

FLORA ANTARCTICA.

ADDENDA ET CORRIGENDA.

PART I.

p. 8. Drosera sp.—I have examined a specimen of this plant, collected by one of the officers of Admiral D'Urville's expedition, and by him given to my friend Mr. Gunn of Tasmania. It is certainly very nearly allied to the *D. uniflora* of Cape Horn, but differs from that and from all its congeners in the perigynous insertion of the stamina.

p. 10. Epilobium *confertifolium*.—Mr. Watson has given me cultivated specimens of *E. alpinum*, entirely according in habit and foliage with this plant.

p. 10. Acæna *adscendens*.—The Kerguelen's Land species differs from this, see Pt. 2. p. 268. t. 96 *B*.

p. 14. Colobanthus *subulatus*.—For an explanation of the monstrous appearance of the flowers alluded to, see Pt. 2. p. 248.

p. 19. Aralia *polaris*.—For analysis of the flowers, &c., see Hook. Ic. Plant. t. 747.

p. 22. Coprosma *repens*.—I have, since the publication of this species, received from Mr. Gunn fruiting specimens of the Tasmanian plant included under this, and figured at Pt. I. t. 16 *B*. In them the berry has but two nucules; and I am obliged to regard it as a distinct species, to which the name of *C. pumila* has been given.

p. 30. Helichrysum *prostratum*:—This is the true *H. bellidioides* of Forster, though not of Banks and Solander (Hb. Banks): in its prostrate straggling habit it resembles a Cape species.

p. 32. Pleurophyllum *criniferum*.—I have observed the same rigid setæ amongst the tomentum of the foliage in this plant as exist in the *P. speciosum*.

p. 37. To notes upon Celmisia *vernicosa*, add:—The generic distinction between this genus and *Chiliotrichum* rests on the presence of scales on the receptacle of the latter.

p. 37. Of the two *Compositæ* alluded to as "dubii generis" I have had the opportunity of examining specimens, they are

1. Gnaphalium *luteo-album*, Linn.

This abounds throughout New Zealand, from the Bay of Islands to Stewart's Island in the extreme south: I have seen Auckland Island specimens collected by the French Antarctic Expedition, with which Dr. Lyall's barren ones entirely accord.

2. Eurybia (Brachyglossa) *Lyallii*, Hook. fil.; foliis amplis alternis breviter petiolatis ellipticoovatis obovatisve acutis plerumque argute subduplicato-dentatis coriaceis super glaberrimis venosis

subter tomento dense appresso lanatis, paniculis terminalibus, pedunculis validis lanatis, capitulis majusculis, fl. radii paucis inconspicuis, corollæ tubo achæniisque villosis. (*Charact. ex exempl. Nov. Zealand.*)

Perhaps most nearly allied to the *Eurybia erubescens* of Tasmania in the foliage, though a very different plant. The pappus is in a measure double, for I observe small setæ mixed with or external to the longer: this is the case with various Tasmanian species, and much diminishes the value of the characters distinguishing *Olearia* from *Eurybia*.

The Auckland Island specimens have large and very obtusely dentate leaves, but are in other respects so similar to those from the mountains of the north Island of New Zealand (collected by Mr. Colenso), that I have little hesitation in considering them specifically the same.

p. 29. Add

1. ERECHTITES *prenanthoides*, DC.; *Prodr.* vol. vi. p. 296 (*in Hb. Gunn*).

HAB. Auckland Island, *M. le Guillou*.

I have examined a specimen of this plant in Mr. Gunn's herbarium (collected by M. Le Guillou, an officer of Admiral D'Urville's expedition): it is small but similar; and much larger ones from various parts of New Zealand appear to be specifically the same with others from Tasmania.

p. 63. Add

4. VERONICA *salicifolia*? Forst.; *Prodr.* p. 3. *Benth. in DC. Prodr.* vol. x. p. 459.

HAB. Auckland Island: *M. le Guillou* (*in Hb. Gunn*).

Specimen in fruit only, but I think referable to this species: it is not an uncommon plant in various parts both of the Northern and Southern Islands of New Zealand.

p. 68. URTICA *australis*, Hook. fil. Add:—foliis nunc omnibus oppositis, pedunculis floriferis petiolo æquilongis simplicibus ramosisve, floribus laxe densisve aggregatis, masculis subterminalibus pilosiusculis, fœminis glabratis.

The above additions to the published characters are supplied from a specimen gathered in Lord Auckland Island by M. le Guillou, and given by him to Mr. Gunn of Tasmania.

p. 69. THELIMYTRA? *uniflora*.—After the description add:—folio solitario tereti canaliculato.

A specimen of this plant, collected by M. le Guillou in Lord Auckland Island, is in no better state of flower than those I gathered, the leaf is, however, in good preservation and similar to that of some other *Thelimytræ*.

p. 71. Orchid. "dubii generis" n. 8.

1. LYPERANTHUS *Antarcticus*, Hook. fil.; folio lanceolato acuminato, perianthii foliolo dorsali galeato acuto lateralibus interioribusque parvis anguste linearibus, labello reflexo marginibus erectis disco plicato sub 6-glanduloso.

Though somewhat different in habit from the New Holland species, I do not think that this can be generically separated from them. The flowers are shorter and less expanded, and the upper sepal larger and more galeate, the remainder smaller than in its congeners. The description is completed from M. le Guillou's specimens, in which the foliage is imperfect.

p. 80. 3rd line from bottom:—for "*Juncus exiguus*" read "*Juncus inconspicuus*."

p. 80. To JUNCUS, add

3. JUNCUS *planifolius*, Br.; *Prodr.* p. 259. *Fl. Antarct.* Pt. 2. p. 358.

HAB. Auckland Island: *M. le Guillou* (*in Hb. Gunn*).

Specimens very diminutive, but, I think, clearly referable to this species, which is not uncommon throughout the Islands of New Zealand.

p. 84. LUZULA *crinita*.—Add to Habitats:—M'c Quarrie Island. (*Hb. Hook.*)

p. 119. 5th line from bottom, for "Bruch and Schimper" read "Nees and Hornschuch."

p. 122. In remarks on *Leptostomum gracile*;—the *L. Bridgesii*, Wils. MS., is *L. splachnoides*, Hook. and Arn.

p. 123. SPLACHNUM *octoblepharum*, add synon.:—*S. plagiopus*, Mont. *in Voy. au Pole Sud, Bot. Crypt.* p. 285.

p. 124. To RACOMITRIUM, add

2. RACOMITRIUM *microcarpum*, Brid.; *Mont. l. c.* p. 284.

HAB. Auckland Island; barren: *M. Hombron.*

p. 128. Genus 11. SPRUCEA, for "*Brid.*" read *Hook. fil. et Wils.*

p. 130. After DICRANUM add

5. DICRANUM *dichotomum*, Brid.; *Mont. l. c.* p. 298.

HAB. Auckland Island; barren: *M. Hombron.*

p. 130. To CAMPYLOPUS, add

3. CAMPYLOPUS *atro-virens*, De Notaris; *Mont. l. c.* p. 300.

HAB. Auckland Island; barren: *M. Hombron.*

p. 132. To POLYTRICHUM, add

2. POLYTRICHUM *juniperinum*, Willd.; *Mont. l. c.* p. 313.

HAB. Auckland Island: *M. Hombron.*

p. 142. For HYPNUM *Terræ-Novæ*, Brid., var. β., substitute

20. HYPNUM *limatum*, Hook. fil. et Wils.; caule humili prostrato vage ramoso, ramis subfastigiatis, foliis subsecundis lanceolato-acuminatis integerrimis enerviis, capsula suberecta, operculo conico.

Dioicum. *Rami* breves, erecti. *Folia* conferta, subereeta, membranacea, e basi lata gradatim angustata, longe acuminata, subpilifera, siccitate nitida, luteola; *perichætialia* erecta, acuminata, pilifera. *Seta* 3–4 lin. longa, rubra. *Capsula* suberecta, curvula. *Operculum* majusculum, conicum, acutiusculum, rubellum.

Allied to *H. acutifolium*, nob.; but the leaves are narrower, more membranaceous, tapering gradually upwards from a broad base; and the areolæ are larger.

p. 143. To HOOKERIA, add

5. HOOKERIA *crispula*, Hook. fil. et Wils.; *Lond. Journ. Bot.* vol. iii. p. 550. *Mont. l. c.* p. 320.

HAB. Auckland Island; barren: *M. Hombron.*

p. 153. After JUNGERMANNIA *vertebralis*, add

27 *bis*. JUNGERMANNIA *punicea*, Nees.; *Mont. l. c.* p. 261.

HAB. Auckland Island: *M. Hombron.*

p. 153. To JUNGERMANNIA *Urvilleana*, add syn.:—*J. abbreviata*, Hook.fil. et Tayl. *in Lond. Journ. Bot.* vol. iii. p. 374.

p. 156. After JUNGERMANNIA *planiuscula*, add

37 *bis.* JUNGERMANNIA *connata*, Sw.; *Mont. l. c.* p. 256.

HAB. Auckland Island: *M. Hombron.*

p. 157. After JUNGERMANNIA *fissistipa*, add

43 *bis.* JUNGERMANNIA *amphibolius*, Nees; *Mont. l. c.* p. 352.

HAB. Auckland Island: *M. Hombron.*

p. 159. JUNGERMANNIA *hippuroides* is *J. capillaris*, Sw., *β. minor*, Lehm. Lind. et Gottsche, *Syn. Hep.* p. 213.

p. 159. After JUNGERMANNIA *albula*, add

50 *bis.* JUNGERMANNIA *filamentosa*, Lehm. et Lind.; *Mont. l. c.* p. 246.

HAB. Auckland Island: *M. Hombron.*

p. 160. After JUNGERMANNIA *mutans*, add

54 *bis.* JUNGERMANNIA *adnexa*, Lehm. et Lind.; *Mont. l. c.* p. 243.

54 *ter.* JUNGERMANNIA *decrescens*, Lehm. et Lind.; *Mont. l. c.* p. 243. t. 19. f. 4.

HAB. Auckland Island: *M. Hombron.*

p. 160. JUNGERMANNIA *hirsuta* is *J. ochroleuca*, Spr.; *Gottsche, Nees et Lind. Syn. Hep.* p. 240.

p. 160. JUNGERMANNIA *mollissima*, is *J. tomentella*, γ. Gottsche, Nees and Lind. *Syn. Hep.* p. 237.

p. 162. JUNGERMANNIA *elegantula* is MADOTHECA *Stangeri*, Gottsche, Nees, and Lind. *Syn. Hep.* p. 280.

p. 165. After JUNGERMANNIA *scandens*, add

71 *bis.* JUNGERMANNIA *gracilis*, Nees; *Mont. l. c.* p. 223.

HAB. Auckland Island; *D'Urville.*

p. 167. After JUNGERMANNIA *plicatiloba*, add

77 *bis.* JUNGERMANNIA *cucullata*, Nees; *Mont. l. c.* p. 218.

HAB. Auckland Island: *M. Hombron.*

p. 177. Amongst synonyms to XIPHOPHORA *Billardieri*, dele "CTENODUS, Kütz."

p. 180. RHODOMELA *glomerulata*, Mont., is POLYSIPHONIA *botryocarpa*, nobis.

p 184. After JANIA insert

1. MELOBESIA *verrucata*, var. *Antarctica*, vide Part II. p. 482.

p. 191. After CALLITHAMNION *gracile*, add

PLATE LXXXVIII. *Fig.* 1.—1, plant of the natural size; 2, ramulus; 3, ditto with sphærospores; 4, articuli of ditto:—very highly *magnified.*

p. 193. After ULVA *latissima* add

1. ZIGNOA *clathrata*, Trevis.; *Mont. l. c.* p. 30. Enteromorpha, *auct.*

HAB. Auckland Island; *D'Urville.*

p. 196. STEREOCAULON *Argus*.

I have examined specimens of *S. ramulosum*, approaching this so very closely, that Mr. Churchill Babington inclines to consider the plants as varieties of one species.

p. 197. CENOMYCE *ecmocyna*, var. *gracilis*, is rather the *C. sparassa*; but the specimens are not very satisfactory.

p. 198. STICTA *Freycinetii*; these specimens probably belong to the *S. Delisea*, Fée., and differ from the true *S. Freycinetii* in the flatter (not concave) sessile apothecia.

p. 198. After STICTA *Menziesii*, add

5 *bis*. STICTA *Richardi*, Mont.; *in Voy. au Pole Sud*, p. 187.

HAB. Lord Auckland's group: *M. Hombron.*

p. 198. For 6. STICTA *Richardi*, substitute

6. STICTA *Billardieri*, see p. 527.

I very much doubt the *S. Richardi*, Mont., being anything more than a larger state of this plant. It is a very frequent and most variable inhabitant of New Zealand.

p. 199. After PARMELIA *sphinctrina*, add

3. PARMELIA *enteromorpha*, Ach.; P. physodes, var. *vittata*, Mont. *in Voy. au Pole Sud, Bot. Crypt.* p. 183.

HAB. Lord Auckland's group and Campbell's Island; not uncommon.

4. PARMELIA *diatrypa*, Ach.; P. physodes, var. *Mont. l. c.*

HAB. Lord Auckland's group; on trunks of trees.

p. 199. For PARMELIA *rubiginosa*, Ach., read

PARMELIA *Mariana*, Fries? *Syst. Orb. Veg.* pp. 245 and 284 (fid. Bab.).

Of the present plant the Rev. C. Babington remarks, "This seems to differ from *P. rubiginosa*, not only in general habit, but most especially in the apothecia being black: the scales, too, are singularly appressed; and the hypothallus is more carbonaceous. If a described plant, it is either *P. pellita*, Ach., or *P. Mariana*, Fries. The Acharian plant is barren, whence the thallus of the fertile might differ from this. Fries' plant exactly agrees in the apothecia and hypothallus; whilst the variation of the thallus to me seems caused by his specimens being more perfect."—*C. Babington.*

p. 199. After LECANORA *Parella*, add

5. LECANORA *varia*, Ach.; *Lich. Univ.* p. 377. *Engl. Bot.* t. 1666.

HAB. Lord Auckland's group; on bark of trees.

p. 200. For LECIDEA *geomœa*, substitute

1. LECIDEA *papillata*, Fries; *Lich. Europ.* p. 336.

"I have little doubt of this being the plant of Fries, judging from the description."—*C. Babington.*

p. 200. Add

3. LECIDEA *parasema*, Ach.; *Syn. Lich.* p. 17. *Schærer, Lich. Helvet.* n. 197–199. L. Lightfootii, *Engl. Bot.* t. 1457.

HAB. Lord Auckland's group; on trunks of *Dracophyllum.*

p. 200. Add

1. VERRUCARIA *punctiformis*, Ach.; *Syn. Lich.* p. 87. V. stigmatella, *Engl. Bot.* t. 1891.

HAB. Lord Auckland's group; on trunks of trees.

p. 200. PORINA *granulata*, Hook. fil. and Tayl., is probably a state of *Lecanora tartarea.*

PART II.

p. 212. 23rd line, for "granitic" read tertiary.

p. 228. To HAMADRYAS, add

4. HAMADRYAS *paniculata*, Hook. fil.; foliis longe petiolatis rotundatis sub-5-lobis, lobis obtusis crenatis supra glabratis reticulatis subter parce sericeo-tomentosis, scapo gracili masculo laxe paniculatim ramoso multifloro superne tomentoso.

HAB. Staten Land; *Webster*.

Petioli (exemplare unico) 4 unc. longi, glabri, validi. *Folia* concava, 2 unc. lata, coriacea, inæqualiter lobata, vix ad medium fissa, lobis grosse et obtuse crenatis. *Scapi* folio longiores; masculi parce serici, ramis paucis inæquilongis multifloris; fœminei (manci) pauciflori. *Flores* ut in *H. argentea*.

A distinct looking plant, both in the foliage and compound panicle, from any of its congeners. The specimens are in a very poor state.

p. 241. 4th line from bottom, for "*S. australis*" read *S. pinnatifida*.

p. 253. OXALIS *enneaphylla*, Cav.; add to the Habitat:—Strait of Magalhaens; *MM. Hombron* and *Jacquinot*.

p. 274. GUNNERA *Magellanica*:—the Colombian plant alluded to as probably identical with this, is the *G. pilosa*, H.B.K.

p. 277. 13th line from bottom, for "not one" read but one.

p. 278. After MONTIA, add

2. LYALLIA, *Hook. fil.* Portulaceæ.

Calyx persistens, 4-partitus, lobis subæqualibus obtusis. *Petala*, *stamina*, *ovariumque* non suppetebant. *Fructus*, utriculus globosus, carnosus, apiculatus, venosus (stomatibus instructus), 1-locularis. *Semina* 3, quorum 2 abortiva, e fundo utriculi orta, funiculis validis ascendentibus affixa: semen maturum orbiculari-reniforme, compressum; testa crustacea, subtiliter tuberculata; albumine carnoso v. subfarinaceo; embryone periphærico.—Herba *suffrutescens*, Insulæ Kerguelen, *dense cæspitosa*, *glaberrima*, *ramosissima*; ramis *teretibus*, foliis *densissime imbricatis tectis*. Pedunculi *brevissuli*, *solitarii*, *terminales*, *basi bracteis connatis lanceolato-subulatis aucti*. Flores *verosimiliter valde inconspicui*. Fructus *parvus inter folia fere occlusus*.—Genus dicatum Doctori D. Lyall, amico meo periplique Antarctici participi, assiduo solertique plantarum indagatori.

1. LYALLIA *Kerguelensis*, Hook. fil. (TAB. CXXII.)

HAB. Kerguelen's Land; forming large tufts in barren places, but very local.

Radices lignosi, descendentes. *Rami* perplurimi, densissime fastigiati, in cæspites globosas dispositi, 3–5 unc. longi, stricti v. curvati, ¼ unc. diametro. *Folia* secus ramos densissime imbricata, pluriseriata, alterna, ramo multoties angustiora, erecta, incurva, linearia, sessilia, subconcava, apice rotundata, obscure irregulariter sinuato-dentata, 3–5-costata (costa in nervos validos parallelos infra apicem evanidos divisa), coriacea v. subchartacea, persistentia, sicca pallida, terminalia pallide virescentia, 2–3 lin. longa, ter quaterve longiora quam lata. *Pedunculi* terminales, solitarii, folio breviores, erecti, infra florem dilatati, basi bibracteati. *Bracteæ* pedunculis æquilongæ, basi connatæ, acuminatæ. *Calyx* fructiferus utriculo brevior, e foliolis 4 (nunc 5?) ovatis obtusis 5-nerviis utriculo appressis constans. *Petala* et *stamina* ignota, sed (ab indole calycis discique) verosimiliter perigyna. *Utriculus* ½–1 lin. longus. *Semen* utriculum fere implens.

Hitch del et lith.

Reeve imp.

Lyallia Kerguelensis Hook fil.

This is certainly, in its present state, the most obscure and, except the *Pringlea*, the most remarkable plant of Kerguelen's Land. I have placed it provisionally amongst *Portulaceæ*, knowing no other order with which it has any equally direct affinity. There is one plant to which it bears, at any rate, a very close resemblance if nothing more, the *Pycnophyllum molle*, Remy (Ann. Sc. Nat., 3rd Ser. vol. v. p. 355. t. 20. f. 2–8), of the Bolivian Andes; for a fragment of the original specimen of which (preserved in Herb. Mus. Paris) I am indebted to the liberality of M. Decaisne. In *Pycnophyllum*, however, the leaves are truly opposite and connate, and the capsule three-lobed, if not three-valved.

This highly curious genus, coming from the most interesting island visited by the Antarctic Expedition, will serve to commemorate in some slight degree the important services rendered to Botany by my zealous friend and co-operator, Dr. Lyall, R.N.

PLATE CXXII.—*Fig.* 1, a leaf; *fig.* 2, bracteæ, peduncle, and fruit; *fig.* 3, utriculus removed from the calyx; *fig.* 4, vertical section of the same, showing the ripened and abortive seed; *fig.* 5, seed and funiculus; *fig.* 6, seed, with the testa removed; *fig.* 7, embryo:—all *magnified*.

p. 292. Of the Valdivian specimens alluded to as belonging apparently to this species, I have recently examined complete individuals, which prove them to be *M. imbricatum*, Poepp. The female flowers do not probably differ materially from those of *M. punctulatum*.

p. 296. In description of Plate CIV. the figures of 9, 10, 11, and 12, referred to as taken from Bridges' Valdivian specimens, belong to *M. imbricatum*, Poepp.

p. 304. CHILIOTRICHUM *humile*:—M. Planchon considers this species, together with the *C. Kingii* and *C. Darwinii*, as referable to the genus *Nardophyllum*, DC.

p. 327. LEPTANTHUS *Americanus*:—this appears to be a true *Prionotes*, the placentation being the same as in the original *P. cerinthoides* of Tasmania, and the position of the bracteæ on the pedicel not affording a generic character. In two undoubted congeners from Tasmania, the ovules are attached to erect basal columns.

p. 341. After CHENOPODIUM, add

2. BLITUM, *L.*

1. BLITUM (Orthosporum) *Antarcticum*, Hook. fil.; caule prostrato ascendente parce papilloso, foliis petiolatis deltoideo-ovatis obtusiusculis profunde irregulariter sinuato-dentatis lobis lobulatis utrinque petioloque papillosis, glomerulis sessilibus compositis axillaribus et in spicam terminalem foliosam dispositis, perigonii 3-phylli foliolis herbaceis post anthesin immutatis utriculum superantibus linear-spathulatis dorso grosse papulatis, semine verticali orbiculari punctulato margine obtuso.

HAB. Staten Land; *Webster* (*in Mus. Hort. Soc. Lond.*).

Ramus 10-uncialis simplicissimus solum mihi notus. *Petioli* unciales, foliis æquilongi. *Flores* minimi, dense aggregati.

Described from a solitary specimen in the Herbarium of the Horticultural Society of London, in the absence of any means of comparing it with its congeners in the Herb. Hook., of which the *Chenopodiaceæ* are now in the hands of M. Moquin Tandon for examination.

p. 343. NANODEA *muscosa*:—I am inclined to suspect, from certain circumstances connected with the locality of this plant, that it may be parasitical, like the *Thesium linophyllum*.

p. 359. LUZULA, sp.—Of this species I have recently found more complete (hitherto mislaid) specimens in my collection, they may be thus described:—

2. Luzula *Antarctica*, Hook. fil.; pusilla, cæspitosa, foliis late lineari-subulatis concavis basin versus ciliatis, culmo gracili filiformi arcuato v. erecto, panicula ovata densissime lanata, bracteolis foliolisque perianthii subæqualibus superne scarioso-membranaceis inferne medioque coloratis marginibus in lacinias piliformes fimbriato-laceras apicibus hyalinis, capsula elliptico-subrotundata perianthio dimidio breviore, stigmatibus 3 sessilibus filiformibus.

Hab. Hermite Island, Cape Horn; alpine rocks.

Habitus *L. spicatæ*, statura *L. arcuatæ* humilior. *Folia* uncialia, basi fere ½ unc. lata, plerique exemplaribus meis mancis superne glabrata v. glaberrima, basin versus ciliata. *Culmus* filiformis, 2-uncialis. *Panicula* ½ unc. longa, late ovata. *Perianthii foliola* per totam longitudinem in lacinias foliolum longe superantes fissa; parte inferiore mediaque brunnea, coriacea, superiore hyalina.

Allied to *L. Peruviana* (of the Andes) in habit; but the leaves (in my specimens) are not ciliated and the perianth is of a different form, its leaflets being shorter, broader, not coriaceous, and subulate at the apices, and with very much more copious and longer ciliæ.

p. 371. Muhlenbergia *variflora*, Hook. fil. :—Nees (in Herb. Arnott) regards this as a species of *Streptachne*, H.B.K.

p. 375. Arundo *pilosa*; add to Habitats :—Fuegia, Good Success Bay; *Banks* and *Solander*.

p. 381. Festuca *Fuegiana*, *n.*, is considered by Nees (fid. Herb. Arnott) a variety of *Poa laxigera*, Nees, *in Martius Fl. Bras.* p. 490.

p. 392. Lomaria *alpina*, Br.; add to synonyms :—*L. pumila*, *Raoul, Choix de Plantes de la Nouvelle Zelande*, t. 10. t. 2. f. A.

p. 393. Gleichenia *acutifolia*; add to the Habitats :—Staten Land; *Mr. Webster*.

p. 394. Lycopodium *clavatum*, var. *Magellanicum*; add synonym :—L. confertum, *Willd. Sp. Pl.* vol. v. p. 27. *Hook. et Grev. in Bot. Misc.* vol. ii. p. 372.

p. 394. After Schizæa, add

10. Botrychium, *Swartz.*

1. Botrychium *Lunaria*, Sw.; *Syn. Fil.* p. 171. *Engl. Bot.* t. 318.

Hab. Fuegia, Good Success Bay; in sandy places: *Banks* and *Solander* (*in Herb. Mus. Brit.*).

Identical with the European plant, which ranges in Europe from Iceland and Lapland to the Asturias. In North America it is only found in Hudson's Bay, Newfoundland, Canada, and the Rocky Mountains. I know of no habitat except this of Fuegia and Tasmania anywhere south of the north of Spain. It is apparently a very rare Fuegian plant.

p. 403. Orthotrichum *luteolum*, Hook. fil. et Wils.—This approaches very closely the description of *O. germanum*, Mont. (in Ann. Sc. Nat., 3rd Ser. vol. iv. p. 121), a Chilian plant, but the leaves of which are said to be rather obtuse and reflexed at their margins.

p. 408. After Campylopus *flexuosus*, add

3. Campylopus *rigidus*, Hook. fil. et Wils.; caule erecto subramoso rigidiusculo, foliis ovato-lanceolatis acuminatis integerrimis, nervo latissimo.

Hab. Hermite Island, Cape Horn; on the summits of the hills.

p. 409. TORTULA *densifolia*, Hook. fil. et Wils., is evidently closely allied to *Barbula unoides*, Schwaeg. Suppl. t. 310.

p. 410. POLYTRICHUM *compressum*, Hook. fil. et Wils.

Var. *β.*, foliis apices versus obscure serratis lamellatis, capsula longiore.

HAB. Hermite Island, Cape Horn; with var. *α*.

p. 418. HYPNUM *subpilosum*, Hook. fil. et Wils.; (character reformata) caule arcuato parce ramoso, ramis recurvis attenuatis, foliis cordato-ovatis acuminatis subpilifaris concavis striatis serrulatis ruptinerviis, capsula subrotunda cernua, operculo conico, seta scabra.

p. 449. After EXIDIA *Auricula-Judæ*, add

2. EXIDIA *flammea*, Berk.; aurantiaca, hemispherica, depressa, substipitata, margine crenulata subtus rugulosa minutissime verrucoso-spiculata, sporis oblongis basi curvatis. (TAB. CLXIV. Fig. III. left hand specimen.)

HAB. Hermite Island, Cape Horn; on dead wood amongst the snow.

Hemisphærica, leviter depressa, vel humore saturata planiuscula, brevissime stipitata; margine leviter crenata; subtus rugulosa, sub lente maxime augente subtiliter verrucosa, hic illic spiculata. *Sporæ* oblongæ, basi curvatæ.

Allied to *Exidia truncata*, but differing remarkably in its bright colour. When first taken out of spirit the hymenium is quite plane, but becomes depressed afterwards. It is doubtful whether the margin be crenate in the living plant, for it is not represented in the drawing made from the fresh specimen.

PLATE CLXIV. *Fig.* III.—2, (left hand figure) *E. flammea*, of the natural size.

p. 451. PEZIZA *Kerguelensis*.—The Hermite Island plant is *Exidia flammea*, Berk.; to which also the left hand figure of Plate CLXIV. Fig. III. 2, is referable. The right hand figure (1), which, however, is not represented sufficiently adnate, and the dissections, belong to *P. Kerguelensis*.

PLATES.

PLATE XVI.—The Tasmanian flowering plant, figured at *B*, is another species, *C. pumila*, mihi (see Supplement).

PLATE XXI.—HELICHRYSUM *prostratum*, is *H. bellidioides*, Forst. (see Suppl.)

PLATE LXI. Fig. IV.—HYPNUM *Terræ-Novæ* is *H. limatum*, Hook. fil. et Wils. (see Suppl.)

PLATE LXXXII. *B.*—RANUNCULUS *hydrophyllus*, should be *R. hydrophilus*.

PLATE LXXXV.—HAMADRYAS *tomentosa* is *H. argentea*, Hook. fil. (see Suppl.)

PLATE LXXXVII.—BERBERIS *microphylla* is a synonym of *B. buxifolia*, Lam. (see Suppl.)

PLATE XCIII.—SAGINA *subulata*, D'Urv., is a synonym of *Colobanthus subulatus* (see Suppl.)

PLATE CI.—CALDASIA *daucoides*, Hook. fil., is a synonym of *Oreomyrrhis andicola*, Endl. (see Suppl.)

PLATE CIV.—Figs. 9, 10, 11, and 12, *Myzodendron imbricatum*, Poepp. (see Suppl.)

PLATE CXII.—MACRORHYNCHUS *coronopifolius* should be *M. pumilus*, DC. (see p. 324.)

PLATE CXV.—GENTIANA *Magellanica* should be *G. Patagonica* (see p. 328).

PLATE CXVI.—GAULTHERIA *Antarctica*, Hook. fil., is synonymous with *G. microphylla*, Hook. fil. (see p. 327.)

PLATE CXVIII.—OURISIA *Antarctica*, Hook. fil., is synonymous with *O. breviflora*, Benth. (see p. 335.)

PLATE CXX.—PRIMULA *Magellanica*, Lam., is a variety of *P. farinosa* (see p. 337).

PLATE CXXIX.—SISYRINCHIUM *pumilum*, Hook. fil., is a synonym of *Tapeinia Magellanica*, Juss. (see p. 353.)

PLATE CXXX.—ALOPECURUS *Antarcticus*, Vahl, is a variety of *A. alpinus* (see p. 370).

PLATE CXXXVIII.—POA *Kerguelensis*, Hook. fil., is TRIODIA *Kerguelensis*, Hook. fil. (see p. 379).

PLATE CLVII. Fig. VII.—JUNGERMANNIA *cavispina*, Hook. fil. et Tayl., is a variety of *J. austrigena*, Hook. fil. et Tayl. (see p. 431.)

PLATE CLXI. Fig. III.—For "JUNGERMANNIA *reclinata*," read "*J. retusata* (see p. 441).

PLATE CLXIV. Fig. III.—1, PEZIZA *Kerguelensis*, Berk., to which also the dissections, 3, 4, and 5, belong; 2, is EXIDIA *flammea*, Berk. (see Suppl.)

PLATE CLXIX. and CLXX.—MACROCYSTIS *luxurians* is a variety of *M. pyrifera*, Ag. (see p. 461.)

ALPHABETICAL INDEX

TO

PART II. OF THE FLORA ANTARCTICA,

CONTAINING THE

BOTANY OF FUEGIA, THE FALKLANDS, KERGUELEN'S LAND, ETC.

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